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ABSTRACT

This guide contains teaching suggestions and information for teachers' use in a career awareness program for Grades K-6. The activities are designed to develop basic attitudes concerning the importance and functions of work by: (1) arousing curiosity about the world of work, (2) enlarging occupational horizons, (3) answering questions concerning occupations, (4) developing basic concepts, (5) investigating some occupations at greater depth, and (6) developing positive attitudes toward one's self, other people, and work. To meet the objectives of the program, activities and resources are suggested by grade level for concepts, which are introduced in order of difficulty and degree of abstraction. At the earliest grade levels, emphasis is placed on a general understanding that people work for a variety of reasons and that there are a number of workers who produce goods and a number who produce services. By the sixth grade, emphasis is placed on orienting students to the concept of clusters with the intention of providing a lead-in to a cycle of hands-on experiences with many clusters. (SB)

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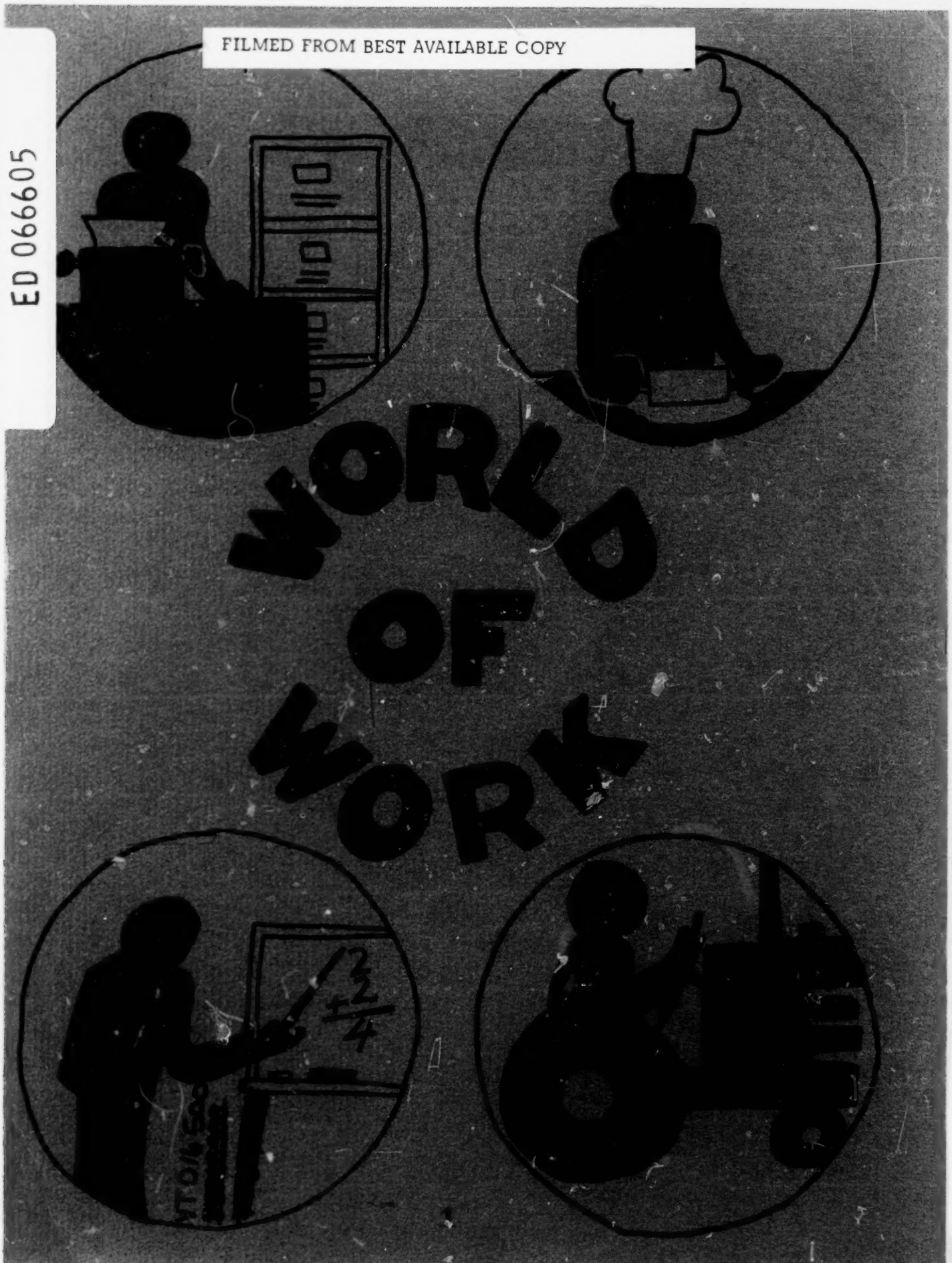

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WORLD OF WORK

CAREER AWARENESS DEVELOPMENT PROGRAM FOR THE ELEMENTARY GRADES

(Revised Version)

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TABLE OF CONTENTS

	PAGE
WORLD OF WORK, CAREER AWARENESS DEVELOPMENT PROGRAM FOR THE ELEMENTARY GRADES	1
KINDERGARTEN	3
Unit Test K	10
FIRST GRADE	11
Unit Test I	21
SECOND GRADE	22
Unit Test II	31
THIRD GRADE	32
Unit Test III	44
FOURTH GRADE	46
Unit Test IV	57
FIFTH GRADE	59
Unit Test V	71
SIXTH GRADE	73
Cluster for Agri-Business and Natural Resources	76
Cluster for Communication and Media	82
Cluster for Construction	85
Cluster for Consumer and Homemaking--Related Occupations	88
Cluster for Environment	93
Cluster for Fine Arts and Humanities	99
Cluster for Health Occupations	101
Cluster for Manufacturing	105
Cluster for Marine Science Occupations	108
Cluster for Marketing and Distribution Occupations	113

PAGE

Cluster for Personal Service Occupations. 117

Cluster for Public Service. 121

Cluster for Recreation, Hospitality, and Tourism. . . 128

Cluster for Transportation. 132

Unit Test VI. 135

WORLD OF WORK

CAREER AWARENESS DEVELOPMENT PROGRAM
FOR THE ELEMENTARY GRADES

There are five basic attitudes to be developed through this program:

There is dignity in the performance of all work.

Work is important.

By working, people in a community help each other.

There is a need for cooperation in work.

Work is important to the worker and to society.

While these will not be taught directly, they will underlie all activities. The teacher needs to keep them firmly in mind at all times. It will be noticed that these are embodied in the pre- and post-test instrument; they will also be considered indirectly in the discussions of specific occupations.

In general, the ten overall objectives of the program will be treated in much the same way. That is, they will be met through the teaching of specific concepts and through activities designed to help students and teachers alike to meet them. The objectives, not necessarily in order of difficulty or importance, are:

Arouse the child's curiosity in regard to the working world.

Encourage wholesome attitudes toward all types of work.

Enlarge the child's occupational horizons.

Answer the child's many questions concerning occupations.

Introduce and begin developing basic concepts through meaningful activities.

Increase the students' awareness of the many occupations found in our society.

Investigate some occupations at a greater depth--education, duties, and working conditions.

Develop positive attitudes towards one's self, other people and work.

Help students understand the interdependency of workers within our society.

Show children the part school plays in the preparation for life.

To assist in meeting these objectives, a group of concepts will be taught. These can be broken into subgroups in various ways, but the approach taken in this program will be to group them according to perceived relationships among them. These large groups will then be arranged in order of difficulty and degree of abstraction. For each group a list of suggested resources and activities will be provided. While the field trip as an activity is seldom mentioned, it is one of the most valuable teaching tools. It can, in fact, be used to teach almost any concept in this program. Actually, it is because of its universal applicability that it is not mentioned. Teachers are urged to take new and different field trips and to make creative uses of the traditional ones.

KINDERGARTEN

Kindergarten is an ideal time to start a program of career awareness. Children of this age are still vitally interested in all that is going on around them. The activities which would best teach the concepts suitable to this age group tie so readily to a good kindergarten program.

As is fitting, there are only four simple concepts to be taught in this first year. These all center very closely around that which is familiar to the young child. The first concept is that

MOTHERS AND FATHERS WORK.

This is an excellent area for developing oral language skills. Many discussions can be held around this topic. Children may also draw and paint their ideas of what their parents do. If parents are available who are willing and able to talk well to a kindergarten, they could be asked to come in, give a very simple description of their job and answer questions. The pupils should be encouraged to ask their parents questions about their jobs and bring the answers back for class consideration. Field trips may be taken to the places of employment of parents.

As an ongoing program, children may help the teacher with bulletin boards centering on occupations. They could well keep a portfolio for each child, starting it with drawings and paintings they have done, augmented by pictures from magazines.

The rudimentary beginnings of economics can be taught here. In a very simple form the children can learn that their parent's job brings in the money which is given to the grocer for food and to other stores for clothing and other essentials.

It should also be pointed out that the mother who is a housewife also works. Too often children are apt to get the feeling that, "My mother doesn't work; she just stays home." The pupils are encouraged to watch their mothers and remember how many different jobs they do, marketing, cooking, cleaning, laundry, nursery, chauffeuring, etc.

The teacher must always remember that the child's pride in his parents is paramount. No matter how menial or disagreeable an occupation may seem to the teacher, she must not let any of this become evident in her attitude. If, for instance, a pupil's father is a garbage man, this may evoke mental pictures of dirt and odors to the teacher; however, if she imagines what would happen without garbage men, she should be able quickly to realize and convey the importance of what this father does. In the same way, she must realize that all jobs contribute to society and help the children to do so. It is also important to build up the child who has no working parent. The teacher may treat this as a case of misfortune, bringing to the children the assumption that parents work if possible. This is necessary for the child in this position and can also lead to a broad social understanding that all humans have a responsibility to help the

weaker or less fortunate. Above all, the self-respect of the child must be maintained and, if possible, enhanced.

SOME WORKERS COME TO THE SCHOOL.

The teacher might inaugurate this by having the pupils draw pictures of "The People Who Work in Our School." It is fairly safe to assume that many categories will be ignored. Probably the bulk of the pictures will concern teacher and principal. The teacher can ask a series of questions to lead to other workers. Who answers the telephone? Who fixes lunch? Who sweeps the floor? Who helps the traffic patrol? Who inspects the school and sometimes orders fire drills? Who delivers paper, books and other supplies? When the children have realized that the school is also served by secretaries, custodians, food service workers, policemen, firemen, deliverymen, etc., they can then go to observe these various workers. It may be possible for one or two children to spend an hour or so with various workers and then report their observations to the group. The use of a cassette recorder should make it possible for a team (probably of two children) to interview various workers. Sample questions might be, "What is your job called?" "What kinds of work do you do in your job?" "How did you learn to do your job?" and any others which the children might suggest.

This study could lead to field trips to the police station and fire station. These, with the interview of the school nurse, tie in very well to the health and safety aspects which are a part of the good kindergarten program.

SOME WORKERS COME TO THE HOME.

The teacher can ask the children to think who comes to the home. One early response may be the postman. From this the teacher can find ways of expanding their lists. Others to be included should be trash collector (or garbage man), carpenter, painter, gardener, milkman, baby-sitter, deliveryman, plumber, electrician, repairmen (telephone, TV, appliance, etc.), newspaper boy, meter man and, in case of emergency, firemen and policemen. The teacher may elicit these by questions, ("Who comes if the telephone doesn't work?") or she might have the children ask their parents to help them think of people who might come to the house. (Be prepared for "Avon calling" and other door-to-door salesmen.) Also the teacher must help the children distinguish between people who are paid to come to the house and those who are not. For instance, some religious organizations rely heavily on volunteer door-to-door work. Also, the professional salesman (Avon, Raleigh, Fuller, etc.) is different from the Girl Scouts with cookies.

Children can learn that some of the parents' salaries must be set aside for such visitors as repairmen. They can also learn such civic concepts as how the mail must not be tampered with and that the police and fire departments also have preventive functions, neighborhood patrol, fire inspections, etc.

Since children of this age are usually imaginative, there can be some good learning in role-playing situations.

One child can be a householder and other children workers who come to the house. Another situation might be to imagine what might happen if a certain worker failed to come when he was supposed to.

Another way of showing a little-known or little-understood (at this age) worker concerns the meter man. Arrangements could be made with the local utility company to meet the meter man, at the school or at a nearby house. He could show his book and explain how his figures show how much gas or electricity was used so the company knows how much to charge. He would be a good example of how some people must walk a long way and be out in all kinds of weather in contrast to some people who sit at desks inside. This age is not too early to start pointing out that each job has certain characteristics. Later the children will learn that the best occupational choice matches possessed characteristics with required characteristics. While they are as yet too young for accurate self-appraisal, they can begin to form simple judgments, such as a person would need to be able to walk well and be ready to accept all kinds of weather to become a postman or meter man. In a few years some may wish to acquire a paper route. They can learn, even at age five, that this would require regular attendance to duties.

Older siblings or parents engaged in any of these occupations might be invited into the class to talk about their jobs. The usual painting activities can be continued, and

the pupils can continue to bring magazine pictures for their portfolios. In addition, they may learn simple songs or poems about the occupations, and since children of this age may have a delightful if somewhat unconventional approach to language, they should try their own poems and songs.

WE WORK AT SCHOOL.

This is the final concept for this level. The main thrust of instruction here should be that everybody works and that work is not synonomous with hard physical labor or a disagreeable situation. The teacher might start with such simple tasks as hanging up coats, straightening chairs, putting away materials, toys, etc. If the class has any monitors, their jobs should be examined. The children can draw or tell what they do. They might draw, tell or role-play what would occur if none of them performed their regular tasks. What would it look like, for instance, if nobody hung up his coat?

The teacher then must guide the children to an understanding that all the activities of the school, even those which seem the most fun, are part of their "job" and they should always do their best. Some preview may be given that, as they progress through the grades, the nature of the tasks will change somewhat, but if they approach with the proper attitude, everything can continue to be enjoyable. If the school has student assistants, office, cafeteria, safety patrol, or even just as occasional messengers, these

can be pointed out as the kinds of jobs one grows into. Above all it should be stressed that work is necessary for everyone, that it can be very pleasant and enjoyable and everyone should cooperate with other people to make everyone's job more pleasant.

UNIT TEST K

This test may be administered on a pre- and post-test basis to determine growth, or it may be used only at the end of the year to assess mastery of concepts. The teacher will probably wish to do this individually and on an oral basis. A recorder may be used, and if a teacher's aide, room mother, older student or other helper can be involved, they can record the pupils' responses so that the teacher can evaluate them later. This test is designed to be scored on a go, no-go basis, and therefore only five points are possible. For instance, if a question has a number of parts, all parts must be correct in order to receive any credit at all for that question. Any question calling for an explanation can be judged adequate or inadequate by the teacher on the basis of knowledge of the particular child.

1. Name five jobs that mothers and fathers might have.
2. Name five kinds of workers who come to the school.
3. Name five kinds of workers who come to the home.
4. What are three jobs that you have in school?
5. What happens to the money that parents get for working at their jobs?

FIRST GRADE

The first grade work in career awareness development continues and builds upon the kindergarten concepts. Some basic facts of simple economics are presented at this level. Also stressed is the importance of work and the necessity for cooperation. There are six concepts; teachers are urged to pace them according to the interests and abilities of their pupils.

The students should also have an on-going collection of occupational information. They may feel themselves slightly above the kindergarten portfolio; on the other hand, they may not as yet be ready for the loose leaf binder which is so serviceable in the intermediate grades. Probably some modification of the kindergarten portfolio should be used. This, however, can feature simple written material as well as pictures, both original and clipped from newspapers and magazines. Again the short, simple field trip to nearby places of employment is an excellent resource. Classroom speakers, if suitable to this level, are also good. The creative teacher can doubtless think of many ways to use a variety of techniques.

MONEY IS THE CHIEF FORM OF BARTER IN OUR SOCIETY.

The teacher might display some items of interest to boys, some of interest to girls and some of interest to both. Then the children could be asked what they would trade for these. It should then become quickly apparent

that they are setting very different values on the objects, both those the teacher is displaying and which they possess. This could give rise to much discussion as to how anybody could agree on a "fair trade."

The students are accustomed to exchanging money for the things they need and want. To explain the necessity for this, a game may be developed to show how it would be if money were not used. Each student picks an occupation and researches it to determine what he would produce. Then, reviewing what they need, they try to work out fair exchanges among themselves. The resulting chaos, disagreement over "fair trades," gaps in what is needed and surpluses of some commodities, should serve to point up the desirability of some common medium of exchange. The teacher might start off by suggesting that if one of her students was the child of a shoe salesman, the exchange naturally would be shoes for teaching. But since this would obviously bring in more shoes than the teacher would need, she would in turn have to trade shoes to someone else for something she couldn't get from the parents of her students. This would of course involve problems in the correct size of shoes, etc. Another suggested problem would be to decide how a fireman would get food if he never was called to a grocery store.

A larger and deeper study can be made from this. Since children are often very interested in Indians, the idea of wampum can be covered. It should quickly become obvious

that money does not have to be made of metal or paper to serve, as long as all concerned agree on a common value.

The use of banks and the meaning of checks might be brought out at this point. It would also be very interesting to have displays of coin collections of both American and foreign coins. Play money can be used to good advantage here, with simple mathematical concepts being taught.

PEOPLE WORK FOR MANY REASONS.

The teacher may introduce the concept by asking why people work. It is anticipated that the general response will concern the acquisition of enough money to buy what is needed. The teacher may then ask about people (sometimes in the news) who have enough money to live on but still work. There have been many examples of this in political and governmental circles lately--Rockefellers, Kennedys, L. B. Johnson, etc. Some exploration is appropriate at this point into the difference between social and personal. Particularly with the younger child this may be a good time to open discussion of the "individual" and "society." Since this is such an area of concern in the modern world, such an understanding can prove exceptionally valuable and pertinent.

PEOPLE WORK FOR VARIOUS REASONS.

Does your grandmother ever take care of you? Does anybody give her any money for this? Is there any work

involved? Does she have to fix any meals, wash any clothes, make the beds? If she doesn't get paid, why does she do it?

The same thing applies to the children's mother. This requires very careful handling so that the children do not feel guilty. However, the teacher can emphasize that parents love and enjoy their children and are rewarded by this love and by their pride in their children.

Why do mothers work in PTA and as room mothers and in various civic groups? Why do they work very hard to prepare for giving a party? Why do fathers get up early and walk long miles to go hunting or fishing or to play golf? Why do parents work in the garden?

Have the children bring articles from the newspapers about people who work. For instance, last year Agatha Christie, at 80 years of age, published her eightieth book. Since she has always been a best seller, she surely didn't need the money. Pablo Casals is still playing the cello. Bob Hope is still entertaining. Why didn't William Lear quit after his first few inventions made him rich?

If there is a foster grandparent group in the area, or a candy-striper program or any similar volunteer organization, a representative could talk to the children about why they have an unpaid job. There should be a long list of motives besides money. It should include love, pride, being needed, helping others, creative expression, wanting to be famous, and so on.

INDIVIDUALS WORK TO MEET PERSONAL AND SOCIAL NEEDS.

The teacher should guide the discussion into the area of personal needs, stressing the need to accomplish and the needs for affection, attention, understanding, etc. When these have been identified, the students should be asked to suggest occupations to meet various needs. For instance, health occupations fill a need to be needed. Responses can be oral or written, depending on what the teacher wishes to emphasize in skill development at this point. With a little ingenuity, the matching of occupations to human needs may be virtually unlimited.

If the teacher can find someone locally available from VISTA, Peace Corps or similar organization, he or she could speak to the class about helping underdeveloped peoples and nations. The role of the missionary in settling America (both North and South) can be explored here. A more modern example might be the Astronauts, whose monetary pay does not begin to compensate for the hazards they face.

The story of Walter Reed's fight against yellow fever for the building of the Panama Canal and the heroism of the volunteers for experiments is another chapter. In another vein, what about the "work" done by the high school or college athlete? What is his reward?

As can be seen, the list of occupations where the reward is not completely monetary is very long. The discussion might be brought around to the "job" the pupil has in school. In kindergarten the concept was introduced that

school is the job of the pupil. What are his rewards? The teacher should point out that there is a sense of pride, satisfaction and accomplishment in doing well and in growing. Also, this may not be too early to introduce the concept of "deferred gratification", the delayed pay-off. Children should do their job of the moment well because of what it will mean later in terms of working and living in society comfortably.

WORK IS IMPORTANT TO THE WORKER AND TO OTHER PEOPLE.

References can be made to the previous concepts to reinforce the idea that work is important to the worker. The class might make a list of all the things they need--food, clothing, shelter, transportation, etc., and then discuss all the workers necessary to provide these. To expand this knowledge, some of the following films might be used:

Exploring a Harbor
The Cattleman
A Visit to the Waterworks
The Wheat Farmer
Your Daily Bread
Production of Foods
Distribution of Foods
Paper
The Factory: How a Product is Made

This list is by no means exhaustive: there are many others in the Educational Media Catalog which could also be used. The students must be encouraged to look beneath the surface; that is, in speaking of food, for instance, they must be encouraged to look at producer, processor, wholesaler, retailer, carriers, etc. The story has much more to

it than the farmer and the grocery clerk. There is also printed material which can serve as resources.

Current events from news media can also be used here. For instance, if the teacher can find a picture of what happens in a garbage collectors' strike, such as occurred in New York, the importance of an occupation which is sometimes downgraded can be stressed. The teacher should be able to attach importance to any occupation suggested, even when children do not see this of their own accord.

Another activity involving news media concerns strikes. Unfortunately, it is too easy to find some group of workers which is either striking or talking about a strike. Have the children, once you are sure they understand the entire concept, answer these questions. They may ask their parents to help with some of these.

1. What people, businesses, geographical areas, etc., are being (or would be) affected by this strike?
2. How would this strike affect you and your family?
3. How would it affect you and your family if it went on and on?
4. What could we substitute for that which is on strike, and what would this mean? (As an example, a railroad strike might mean transportation by truck and airplane. Could we move enough goods this way? Would it cost more?)
5. How does this strike affect the striking worker?

Then the children could each choose an occupation and answer the above questions as to what the effect would be if these workers went on strike. Actually, if the teacher wished to avoid frightening children with ideas of striking

doctors, etc., she might ask them to pretend that all the workers in their chosen occupation decided to take a vacation at the same time, being careful to reassure them later that this would not happen.

Challenge the children to find any occupation in which a strike or simultaneous vacation would not affect many, many people. This should establish the importance of all kinds of work.

COOPERATION IS ESSENTIAL IN THE WORLD OF WORK.

Almost any occupational area can be used to demonstrate this concept, and different classes and teachers will work with whatever areas are most comfortable or salient to them. As a very limited suggestion, the hospital might be a point of departure. The admissions person must work with doctors and floor personnel to know where to assign any patient. Nurses, laboratory technicians, doctors and dieticians cooperate to find out what kind of care is needed and provide it. The surgical team, of course, is a prime example of coordination and cooperation. The teacher and class together can think of many other areas. A game might be developed in which children might take turns naming an occupation, with others earning points by explaining the cooperative relationship link with another occupation.

Another excellent area to point up cooperation would be that of a large restaurant operation. The teacher could initiate a discussion of the various interrelationships.

For instance, all depends upon the one with responsibility of ordering food. However, what he orders depends on what his chefs can prepare and his waitresses serve. He should not order food his chefs don't know how to cook, nor should he plan a menu so complicated that a waitress could only wait on one table. Also, if his dishwashers can only wash enough dishes to serve 100 people, food should not be prepared for 200.

The roles of the chefs, waitresses, bus boys, hostesses, cashiers, dishwashers, etc., can be explained and charted. A speaker may be invited to explain what the children and teacher might not know. Then the children could role-play situations involving cooperation, or lack thereof. The culminating activity could be a field trip to such an operation. The different clothing worn, the chefs' hats, waitresses' uniforms or aprons, and other points of interest should be identified.

Another method of stressing the necessity for cooperation could be centered on the environment in the form of an anti-litter campaign. The class could take a "litter walk" through the neighborhood. By trying to figure out what age group was responsible for the litter, the necessity of cooperation by everybody should be established. (As an example, a discarded school paper might be a child, while beer cans would indicate adults.)

The children might, in their effort to obtain cooperation, make litter bags, anti-litter posters and slogans, a

mobile from collected litter and a bulletin board showing two identical scenes, one with litter and one without. The final activity might be a field trip to see junk cars or cans being prepared for recycling.

UNIT TEST I

This test may be administered on a pre- and post-test basis to determine growth, or it may be used only at the end of the year to assess mastery of concepts. The teacher will probably wish to do this individually and on an oral basis. A recorder may be used, and if a teacher's aide, room mother, older student or other helper can be involved, they can record the pupils' responses so that the teacher can evaluate them later. This test is designed to be scored on a go, no-go basis, and therefore only five points are possible. For instance, if a question has a number of parts, all parts must be correct in order to receive any credit at all for that question. Any question calling for an explanation can be judged adequate or inadequate by the teacher on the basis of knowledge of that particular child.

1. Name two reasons, besides money, for people to work.

2. Name five workers who are important to you and tell why each is important.

3. Why do we need something like money instead of just trading work and things?

4. Explain how cooperation is necessary among the workers in some business. (Choose any business you wish and tell about as many workers in it as you can.)

5. Explain the difference between a personal and a social need and give an example of each.

SECOND GRADE

In the second grade, the world of work expands markedly. Up to this point, an attempt has been made to deal with the home and the school and very familiar surroundings. Now the move is in the opposite direction. The child is to be exposed to a much broader spectrum of occupations, and he is to learn about specialization and interdependency. Teachers, especially those who administer the unit test as a pre-test, tend to have fears about these words. However, even children of this age can understand these concepts if they are well presented.

Again, some sort of portfolio or notebook is to be kept. As befits the increased maturity, this probably could and should feature more written material, child and other produced, and more computation than did those of the kindergartener and first grader. Field trips, too, can become a little longer and a little more complex. However, care must still be taken that these do not exceed the physical, mental and emotional capacity of this age group.

CAREERS ARE OF A WIDE VARIETY.

Each child should interview his parents and report to the class on the occupations covered this way. In cases where the mother does not work outside the home, her occupation will be Housewife, Homemaker, or Wife and Mother. In this situation, naturally, no salary estimate will be made, but duties, qualifications and training (possibly

on-the-job) can be stated. Where a parent is unemployed, the latest or most favored occupation might be described. Also, if a parent is working at more than one job, the student may have the option of describing any or all. Hopefully, the total of the reports will present a picture of great variation. If there is not a sufficiently wide range among this group, the students will need to refer to other sources for additional categories. Class lists may be made.

An interesting collage, perhaps for a bulletin board, can be made by having students cut pictures of people working from papers, magazines, etc. These may be used alone or effectively mingled with job titles, also cut out, or descriptions from the Help Wanted columns of the newspapers. A game may be devised wherein titles must be matched with pictures. It might also be interesting to have the children illustrate fact sheets for their notebooks. These fact sheets would naturally carry the job title and such facts as duties, working conditions, training and qualifications, etc., and the pictures of people working at the particular occupation could be either cut out or drawn by the pupil.

SOME WORKERS PRODUCE GOODS.

Have the students inventory their immediate surroundings. The list should include desks (or tables and chairs), books, paper, pencils, crayons, clothing, etc. These are all goods and were all produced. The films, *Paper* and *The Factory: How a Product is Made*, might be used here as a

basis for individual research and writing on workers who produce goods. Eventually there should be some exploration of the workers behind each product in the original inventory. The next concept follows very closely.

SOME WORKERS PRODUCE SERVICES.

The teacher may then name some other occupations, such as barber, policeman, fireman, waitress, etc., and ask the students to name the goods produced by each of these. It should quickly become obvious that they produce "services" rather than "goods." Then the students might keep a log for a week, noting every producer of services whom they encounter. In every case where occupations are listed, they should be researched and entered in the child's notebook if they do not already appear there.

After these two concepts have been taught, a couple of games might be devised. Using cut out pictures of workers, children could each take a specified number and race to see who could first accurately separate them into piles of "Goods Producers" and "Services Producers." Another game could be a modified form of rummy, with children "melding" a set of so many "Goods" or so many "Services."

Another game could involve spelling. The teacher writes headings on the chalkboard: "Producers of Goods"; "Producers of Services." As pictures are shown the children correctly write the occupational title under the proper heading. Another version would be a "What Am I?" A

description is read; the pupils respond by writing the title under the correct heading.

A SOCIETY NEEDS BOTH PRODUCERS OF SERVICES AND PRODUCERS OF GOODS.

As an individual or class assignment, students might list relations of producers of goods and producers of services, e.g., shoe manufacturer and shoe repairman, automobile manufacturer and automobile repairman, etc. Then discussions may be held on the necessity for both; that is, if there were no repairmen, new articles would have to be purchased. The children will quickly see the fallacy of having to purchase a new car because of a flat tire. The other side of the coin, of course, is that if no shoes were ever produced, what would the cobbler repair. The entire list can be covered in this way. Additionally, by discussing a typical day, the children can expand their awareness that both goods and services are necessary to provide the kind of life we enjoy. Incidentally, it must not be overlooked that housewives and mothers may, to some extent, produce both goods and services.

WORKERS WHO PRODUCE SERVICES AND WORKERS WHO PRODUCE GOODS ARE DEPENDENT ON EACH OTHER.

Each student adopts an occupational role. He must then learn what he produces. (The teacher acts as moderator to prevent arguments over who gets to be what and also to prevent duplication.) Children may fix name tags to help other

children remember what occupation they represent. Each one in turn should write or tell how he needs the other occupations in the room. This could lead to a chart or mural showing a flow of goods and services.

THERE ARE MANY JOBS BECAUSE OF SPECIALIZATION.

This concept may be treated by a review of any primitive culture which the class may have studied, such as the American Indian, etc. The thought to be explored here is how self-sufficient each family unit was, because their needs and wants were simple. Charts or pictures may be made which contrast the simplicity of a more primitive society with the complexity of modern life. The students should then imagine what it would mean if the family unit could still be self-sufficient--for instance, would each family have to build its own automobile, or would they go to some other means of transportation, and if so, what? How would dwellings, food, clothing, etc., be procured? What things could we have? What would we have to do without?

The children may make a chart as a class activity, showing broad areas such as food, shelter, clothing, transportation, health, recreation, etc. Then within each broad category contrasting columns could show what we are able to have now versus what we would be limited to if each family had to provide entirely for itself.

SPECIALIZATION LEADS TO INTERDEPENDENCY.

The teaching of this concept builds directly upon the preceding two. In this area, the students might take a single undertaking; such as the building of a house, and identify the different kinds of workers who are needed, carpenters, bricklayers (for fireplaces), electricians, plumbers, roofers, carpet installers, painters, cement finishers, etc. Then they should decide the necessary sequence of operation, e.g., basic pipe work before some of the carpentry, but the placing of tubs and sinks after the carpenters have proceeded further, etc. If possible and desirable, a field trip to residences in various stages of construction might help with this. There are also books dealing with the subject. This may also be an area where an understanding of unions might be profitable. The classic story, of course, is the one concerning the stagehand who was not allowed to move a table in a theater set until an electrician had removed a lamp from it. However, examples can be found in more familiar settings.

Once the concept of specialization is firmly established, the idea of interdependency becomes quite logical. The students might be asked to draw pictures of what the house would look like if only the electrician or only the plumber had worked on it. The students may then review the material previously done on the necessity of trading with many others to acquire the necessary goods and services.

(Picture files and magazines may also be a good source of material here.)

Reference to history might be used here to amplify. For instance, the idea of a military force could be traced back. In some of the stories about the pioneers in the early days of our country, there are stories showing progression toward specialization. The settler and his family defended their own house. The settlements grew up within stockades or forts. Then the government sent troops, and so on.

BECAUSE EACH PERSON HAS A SPECIAL JOB TO DO, HE LEARNS HOW TO DO THE JOB WELL.

Once upon a time, lightning struck a zoo. None of the animals were hurt, but somehow they found they were all mixed up and had got into each other's body. And so what did we find?

In the body of the zebra was the tiger, very puzzled because his beautiful orange stripes had turned white.

In the body of the elephant was the eagle, very puzzled because, no matter how he tried, he couldn't fly.

In the body of the bear was the monkey, very puzzled because he couldn't swing by his tail, which was suddenly very short.

In the body of the bulldog was the anteater, very puzzled because his nose had shrunk so badly that he couldn't reach into anthills.

In the body of the donkey was the nightingale, very puzzled because when he sang it made such a funny, ugly noise.

In the body of the hippopotamus was the giraffe, very puzzled because, in spite of all his efforts, he could not reach the high branches.

In the body of the snake was the horse, very puzzled because he couldn't find his legs and therefore could not move.

In the body of the deer was the lion, very puzzled because he had clumsy things on his head and, furthermore, something had happened to his claws so that they just wouldn't scratch.

In the body of the turtle was the cheetah, very puzzled because his back was suddenly very stiff and he had lost all his speed of movement.

So all the animals sat in a circle and were very puzzled and nothing was accomplished.

A story such as this could serve to spark a discussion of how organisms are suited to their performance. The roles within the family should be identified, and it should be shown how each member has practiced his job until he does it well and much more easily than at first. Reference may be made here to the first time the students tried to shoot a basket or jump rope and how their clumsy attempts smoothed out through practice. Ask the children to pick two occupations (these could well be those of the mother and father)

and write a humorous story of what would happen if they suddenly traded jobs. An example might be that if a doctor tried to repair cars he might automatically ask the car to take a deep breath or say "ah," or he might ask it where it hurt. A booklet might be made of these stories, and some of the children might act out some of the situations they have written. It must be emphasized that one cannot visualize how a person would act in an unfamiliar employment until it is known how he must act in his own.

Because of the unfamiliar words which have been introduced and, it is hoped, mastered in this unit, a thorough review will probably be desirable. This can take any form the teacher wishes, but it is strongly urged that there be at least one carefully planned field trip. A department store might be a good source here; most people do not realize that half or more of the necessary employees do not deal with the public face-to-face.

UNIT TEST II

This test may be administered on a pre- and post-test basis to determine growth, or it may be used only at the end of the year to assess mastery of concepts. The teacher will probably wish to do this individually and on an oral basis. A recorder may be used, and if a teacher's aide, room mother, older student or other helper can be involved, they can record the pupils' responses so that the teacher can evaluate them later. This test is designed to be scored on a go, no-go basis, and therefore only five points are possible. For instance, if a question has a number of parts, all parts must be correct in order to receive any credit at all for that question. Any question calling for an explanation can be judged adequate or inadequate by the teacher on the basis of knowledge of that particular child.

1. Prove that careers are of a wide variety by naming ten which are not related. (Example--do not give both grocery clerk and bag boy.)
2. Name three workers who produce goods.
3. Name three workers who produce services.
4. What is meant by specialization?
5. Explain interdependency.

THIRD GRADE

While this program and its activities have been designed throughout to integrate with the rest of the curriculum, the third grade unit is perhaps the best suited to work with the social studies area. Government, geography, and history are all covered in this unit. It largely explores many factors which determine available occupations, location, supply and demand, technological and sociological changes, etc. The final two concepts for this grade begin to explore the relationship of school to future occupational success and happiness.

This might be the proper level for the students to begin their notebooks in the more permanent three-ring binder type. If this is not financially feasible, a good art project might be the production of a decorative and fairly durable cover of some sort. Cardboard stitched with a yarn design or covered with burlap is one suggestion; another is the old technique of paper moistened and crumpled, straightened, dried, and varnished. Whatever technique is used should provide a central location for all the pupil's material on the World of Work and should keep it readily accessible. The same sorts of facts as noted in previous units should still be included for each occupation. The teacher might wish to ditto off a sheet with headings and room to include job title, qualifications, training, duties, working conditions, pay, and other.

particular location. This might take the following form:

Tied to location	Not tied to location
Mining	Health occupations
Fishing	Police work
Etc.	Etc.

The children could also try their hands at cartoons. These could show somebody pursuing his occupation in a totally unsuitable location. The teacher might start as an example with

A commercial fisherman in such unlikely spots as a large hotel, a cattle pen, or a mine, or

A miner (perhaps prospector with donkey type) in a busy city or wading into the ocean, or

A cowboy with a herd of cattle, also on a busy street, marching into the ocean, etc.

WHERE A PERSON LIVES DETERMINES THE KINDS OF OCCUPATIONS FOUND THERE.

This is actually a continuation or sub-concept of the previous one. A game might be devised--either for two children or two teams--where one side lists a location (city or state) and the other side must respond with suitable occupations. Then the roles might be reversed; the cue might be an occupation and the response a previously determined number of locations where this occupation could be found.

INDIVIDUALS LIVE IN A PARTICULAR GEOGRAPHICAL LOCATION DUE TO THE NATURE OF THEIR WORK.

This is a logical corollary of the preceding two concepts. Students might do some creative work, stories, poems, or pictures, on the theme of, "If I Were a _____, I Would Live in _____."

If I were a lumberjack,
I'd be big and strong,
And I would work in the woods
With my axe the whole day long,
I would be among the trees
With scenery so pretty,
And I would be so glad
Not to live in a crowded city.

Such efforts may be individual or group.

SUPPLY AND DEMAND HELP DETERMINE AVAILABLE JOBS.

Have the children choose one occupation women might enter and one which men might enter. Then have them imagine what would happen if everyone went into one of these. How easy would it be to find a job in these occupations? How hard would employers of other occupations have to search for employees and what might they be willing to offer?

Current events may also be useful here. The cutbacks in the aviation industry, with the resultant glut of highly trained personnel, particularly engineers, provide an excellent example from the news media.

SUPPLY AND DEMAND INFLUENCE THE KINDS OF OCCUPATIONS FOUND IN A COMMUNITY.

This is merely a refinement of the previous concept. Ask the children to think of a small community, such as Hazen or Schurz. Then, reviewing the occupations listed in their notebooks and others they can think of, have them think how many of each a small community would need. For instance, if there were ten families in a community,

1. Even if all the women went to the beauty parlor once a week, would this support a beautician?
2. Even if all the families ate out once a week, would this support a restaurant with all its employees (cook, waitress, dishwasher, etc.)?
3. How often would TV sets have to be out of order to support a TV repairman?

The list is practically endless and should also reflect what might be found, e.g., if the community is on a major highway, it might support traveler-oriented industry, a cafe, a gas station, etc. If it is the center of an extensive rural area, it might have a post office or other things geared to that population.

Then direct the students' attention to a town such as Ely which is largely a single industry town. Here there would be a demand for those in mining operations. Then consider other employments. For instance, if there are forty families, there will have to be a grocery store a gas station, etc. In addition, by consulting a road map, it will be obvious that, considering a major highway and distances between towns, Ely will need at least one motel.

Finally, consider a larger city with diverse industries. The variety of occupations to be found brings more people, which in turn increases the number of services needed. A spiraling effect becomes apparent.

SUPPLY AND DEMAND HELP DETERMINE OCCUPATIONAL CHOICE.

If you wish to sell furnaces, you do not go to a climate where it is always warm. If you wished to sell a car, you would not call on the president of General Motors. If you manufactured cosmetics, you would not expect the owner of a hardware store to buy from you. On the other hand, if you had a telephone company and found a town where there were lots of people but no telephones, you would want to open a branch there. The children can add lots of examples.

Once the idea is firmly established of supply and demand in products and services, it can readily be transferred to occupations. Have the children bring in the Help Wanted and Employment Wanted sections from as many different newspapers as possible. They can then see what occupational skills are being sought by employers and what kinds of skills are possessed by people seeking work. If papers are available from different cities, this can serve to reinforce the preceding concept that this will vary from community to community. It should prove simple to convey the idea that in preparing for an occupation it is wise to look at supply and demand.

TECHNOLOGICAL AND SOCIOLOGICAL CHANGES ELIMINATE AND CREATE JOBS.

View a film, such as the three-part series on Eighteenth Century Life in Williamsburg. Have the children, individually or as a class, list all the things they can think of which people had then but do not have now. There would also be a companion list of things people have now but did not have then. Then, from these, derive occupations which used to exist but do not now and occupations which have existed only a short time. The latter are probably far easier to arrive at. Then discussion should establish the sorts of scientific or technological changes which were responsible for the creation of some and the elimination of others.

To introduce the concept of sociological change, one might start with another culture, such as the Japanese, and studying the diminishing profession of marriage broker. Then, moving to present-day America, the job of motel manager might be one which, while it is perhaps descended from the innkeeper, has changed, evolved, and proliferated because of changes in the American lifestyle.

Possible areas of change can be studied as follows:

Medicine. Some of the work of the ancient Greek and Roman doctors is fascinating--such as the body possessing four humors and all disease

occurring because one or another of these was out of adjustment. The cure, of course, was whatever plant was suitable to that particular humor. From this man gradually worked through a period when major surgery was dangerous due to lack of anesthetics and antisentics. Nowadays men are, of course, exploring organ transplants and artificial parts. In this connection, the job of the barber presents a most interesting study. When respectable doctors would have nothing to do with surgery, the barber was the one who did it. (It is alleged that this is the origin of the red stripes on the barber pole.) Then compare the barbershop of 75 years ago, where regular patrons had their own shaving mugs. Then talk to a barber today and learn that he never does surgery and, in fact, very seldom shaves his customers.

The ocean. In transportation the change is obvious. In food production it is less so, but not only have fishing methods changed drastically, but the ocean now is being considered as a possible source of other food. Also mining the ocean, for petroleum and other minerals is a new idea and is probably in its infancy, so to speak.

Space. Here the whole business is new and the possible ways it might go are beyond imagination.

Exploring, manned satellites, mining on the Moon, colonization of Mars--you name it: these students might live through it.

Transportation. The first automobiles had sockets for buggy whips. From ox-cart to SST and who knows where beyond.

Power. Man had muscles. Then he used the strength of animals. He has harnessed steam, petroleum, his rivers to provide energy. Can the atom provide constructive as well as destructive power? Could we learn to use the infinite energy of the sun?

Machines and appliances. You and I grew up with radio; our students are growing up with television: what will their children grow up with? From a pot over an open fire through wood and coal ranges, gas and electric ranges to microwave and ultra-sonic cooking. What about the prediction that housewives will have computerized homes?

The list of areas in which tremendous changes have occurred, are occurring, and will occur is endless. Based on this kind of study, the children might imagine a world of the future and write or draw illustrations of it. Don't dismiss their ideas as fantastic; after all, the rainmaker uses a plane and chemicals instead of a

rattle and chants, and if a stadium can be domed, why not a city?

One very small area of dramatic change is available in the Reno area. From Harrah's Automobile Collection through a contemporary auto dealer's establishment to Lear industries, what could be more thorough?

Probably by this point the pupils have found one or more jobs which sound enthralling to them. While a firm vocational choice is not sought at this point, it is the place to begin certain ideas. One of the most important of these is the necessity for education.

EDUCATION, BOTH IN AND OUT OF SCHOOL, IS USUALLY REQUIRED FOR A JOB.

This is another place where the Want Ad sections of all available newspapers might be used. Many of the ads will specify a certain educational level, certain skills, or experience.

The notebooks being kept by the students may be reviewed for educational information. The brochures from the Nevada State Employment Service also have this information. The occupation of L.P.N. is an excellent example

requiring from one to eight or more years beyond. Help the students research as many different types of education beyond high school as possible--junior and community colleges, business college, beauty or barber college, technical institutes, correspondence schools, colleges, universities, law and medical schools, etc. If possible, some information might also be obtained from a recruiting officer about the variety of schools operated under military auspices.

SCHOOL HELPS A PERSON PREPARE FOR THE FUTURE.

This might be another place where a game could be devised. This one might pit teacher against class or one team against another. One side tries to think of an occupation for which one would not require school; the other side must respond by showing how the person in that job does indeed need school. After a time the two sides reverse roles.

An an example, the class says a taxi-driver does not need any school. The teacher replies that he has to know how to read and write to get his driver's license, he has to know geography to read a map, and he has to know arithmetic to read the meter and collect fares. It is possible that the pupils will start with occupations which obviously require school and only gradually become more sophisticated. However, they should realize eventually

that only a hermit with ample resources and well-defined supply lines can afford to be ignorant.

UNIT TEST III

This test may be administered on a pre- and post-test basis to determine growth, or it may be used only at the end of the year to assess mastery of concepts. The teacher may, according to his assessment of his class, reproduce this by ditto or mimeograph, may write the questions on the chalkboard, may give it orally, or may adopt any other means which seem most appropriate. In the case of students with limited written language skills or other handicaps, the teacher may wish to administer it orally and individually. In this case, the use of a tape or cassette recorder is recommended. This test can be administered, in those circumstances, by an aide or more proficient student for the teacher's evaluation at his convenience. The test is designed to be scored on a go, no-go basis, and therefore only five points are possible. For instance, if a question has a number of parts, all parts must be correct in order to receive any credit at all. Any question calling for an explanation can be judged adequate or inadequate by the teacher from the background of his knowledge of that particular child.

1. What kind of occupation might you want in the future, and how would what you are learning in school now be helpful in it?

2. Name one job which operates at all levels, local through international, and show what it would be at all levels.

3. Explain, giving four specific examples, how location affects occupation.

4. Explain how supply and demand affect occupation.

5. Give five examples of jobs which have been created and three examples of jobs which have been eliminated because of technological and sociological change.

FOURTH GRADE

The fourth grade unit takes up where the third grade unit left off. The first two concepts, in fact, could almost be used as a review of the last year's work. From then on, different subject areas are treated separately.

Again it must be urged that the students keep some sort of notebook. If this is not done, information tends to get scattered, frayed and lost. While the basic inclusions in this notebook should continue to be fact sheets, pictures and other materials pertaining to specific occupations, an occasional child will have something else he wants to include. For instance, one boy took a trip with his parents. He kept a sort of diary with emphasis on all the different workers he saw. This made an interesting section, which was also colorful since he had picked up post cards along the way. It is probably needless to add that an occasional notebook check by the teacher would not be out of place. These might well form a partial basis for evaluation by the teacher.

Again the field trip, with good class pre-planning and follow-up, is suggested as an excellent teaching tool. It is seldom that a specific trip is recommended as a part of an activity, but teachers are urged to look at the list of established trips and find those most suitable to their class and purpose. Furthermore, if a class has a new idea for a trip and it can be justified (not a difficult task,

usually), get in touch with the teacher-coordinator, and everything possible will be done to arrange it.

WHAT WE LEARN IN SCHOOL WILL HELP US WHEN WE'RE OUT OF SCHOOL.

Students might ask parents and neighbors what they had learned in school which they found helpful now and why. This might become a contest to see which student could come up with the longest list. A game of challenges could be worked up. One contestant "challenges" the other with some piece of knowledge or some subject area and the one who is challenged must reply with an occupation to which it is useful and why or how. If too many challenges cannot be answered, even with the teacher's assistance, it might be time to take a good look at the curriculum. The teacher should also be aware that the average American changes jobs four or five times during his lifetime and certainly the average fourth grader has not (nor should he have) made a firm occupational choice. This is the refutation for "He needs to learn this junk because he's going to do such-and-such, but do I have to?"

SCHOOL IS A PART OF THE PREPARATION FOR A CAREER.

One approach might be to again have the class set itself up as a community in that each has an occupation and to some extent does business with each other. Have each student work up situations in which he must deal with each

other member of the class. These might be done as skits or role-playing or they can be written or drawn. Then there should be analysis, either individual or group, of all the school-learned skills involved. Since most of the obvious ones will be reading, writing, and mathematics, the teacher will have to be very creative in showing where other curricular areas come in.

This might be a good place for an invited speaker, either from Employment Security or from personnel management of some business. The teacher should brief the speaker in advance to stress not only the academic matters to be learned in school, but also the habits such as neatness, responsibility, pride in performance and getting along well with others.

Since all of the above are areas which the teacher is continuously striving to teach, this assistance should be welcome. Also, since most children tend to like games, the teacher may use baseball or whatever other game is popular at the time to stress working well with others. More people, in modern society, lose jobs because of inability to get along well with others than because of failure to perform their assigned duties.

MANY PEOPLE HAVE SPECIAL EDUCATION FOR THE WORLD OF WORK.

This concept, which is a logical outgrowth of several previously studied ones, offers a chance for a slightly different approach. The teacher might present the concept and

have the class make a decision on how it could most effectively be studied. This is also an area where committee work could benefit. Each committee could do research, interview people, etc., to determine what special education was necessary for:

1. Doctors
2. Dentists
3. Keno writers
4. Secretaries
5. Beauticians
6. Lawyers
7. Automobile mechanics
8. Taxi drivers
9. Librarians
10. Firemen

This list, of course, could be expanded almost infinitely. It might also be worthwhile to review previous concepts here by determining what common core of knowledge was necessary.

THE DESIRE TO READ GIVES MANY PEOPLE JOBS.

What do people read? Obviously, there are many answers. The students will come up with the common ones of books, magazines and newspapers. If others, such as captions on TV pictures or material printed on containers, do not emerge immediately, the teacher may have to elicit them through questions.

Where do these things come from? This would be a good place to develop some sort of chart or pictorial representation. The class should include the most basic materials, such as paper, ink, bindings, etc., and the processes,

writing, editing, printing, publishing, distributing, selling, etc. Field trips may be desirable here, with the local newspapers and perhaps Baker and Taylor, if possible.

READING HELPS PEOPLE IN THEIR OCCUPATIONS/CAREERS/JOB/WORK.

Suppose you buy a model kit and want to put the model together. What must you do first? Or suppose you wish to make a cake for your mother's birthday. What must you do first? In either case, the answer is read--read the directions and read the recipe. Have the children go through their list of occupations and decide what has to be read in each one.

PEOPLE NEED TO BE ABLE TO LISTEN WELL IN THEIR WORK.

What would happen to the following people if they didn't listen well?

The taxi driver, when the passenger gave him the address?

The telephone operator, when she was given a number to call?

The secretary, when her employer dictated a letter?

The nurse, when the doctor gave his instructions for patient care?

The fireman, when he is told where a fire is?

The tape recorder may be used here to help children develop listening skills. The teacher should help the students in discovering speech areas to be considered, such as rate, tone, inflection, mispronounciations, etc.

PEOPLE NEED TO BE ABLE TO WRITE IN MANY JOBS.

What do people need to write? Naturally there are many categories where writing is paramount, but there are others where it is also important.

The receptionist must be able to write messages which can be read easily by the one for whom they are intended. The waitress must be able to write checks which can be understood by the cook, the customer and the cashier. The counter girl at the cleaners must be able to write descriptions so the customer gets the right clothes back. These all refer to legibility. There are all sorts of authors and technical writers who must be concerned with grammar and style. Even in packaging and advertising, a high degree of skill is necessary to make the message say what is intended.

Have some children write directions for performing some task within the school environment. Then have the other children attempt to perform the task, using only the directions and no other knowledge.

Have the students write advertising copy for some product. This is a good place to develop the concepts of legal restrictions and ethical restrictions. It is entirely possible at this point to branch out into the areas of the Food and Drug Administration, Consumer Protection, Truth in Lending, etc., depending upon the interest and maturity of the students.

PEOPLE NEED TO BE ABLE TO SPEAK WELL IN THEIR WORK.

Have the children develop charts or simple graphs based on interviews with their parents. The following questions would be asked:

1. Do you talk in your work?
   Yes_____ No_____

2. Does talking help in your work?
   Yes_____ No_____

3. Can you do your work without talking?
   Yes_____ No_____

If desired, this list can be expanded to include to whom they have to talk, how important it is that they convey their messages accurately, etc. There might also be questions as to whether they have to speak grammatically to convey their message. Other special conditions might be explored, such as having to talk in a very noisy place or with a special vocabulary.

From this information, bar graphs, percentages, etc., can be designed or calculated. If the class wishes to extend this, they may interview others in addition to their parents.

THE ABILITY TO COMMUNICATE EFFECTIVELY HELPS A PERSON WORK WELL WITH OTHER PEOPLE.

This can lead to a fascinating study of the history of communication. Students can examine such primitive methods as smoke signals or drum beating. They might then try to decide what sorts of messages could be conveyed through these means. They might try to devise a code and then send

a message. It would be presumed that they might quickly discover the limitations of these methods in terms of distance, speed and complexity. Ask them to imagine what kind of relay systems would be necessary to send a message across the country.

The old game of "Gossip" could be used here. The children form a circle. The first person whispers a sentence to the next one, who in turn whispers it to the next and so on until it gets clear around the circle. The final and original versions are usually nowhere near the same; this should point up the difficulty involved whenever a message must be relayed.

There are further developments in communication which are interesting. The trail signs of rocks or grass (such as have been used by Scout troops), blazes of the early scouts, rock drawings, Egyptian symbols and so on, up to the adoption of the alphabet. Included in this might be other forms of communication, one of which could be nonverbal. Much has been appearing recently in this area, and the children could find this a profitable area of study. They have already learned to assess facial expression and tone of voice.

EFFECTIVE COMMUNICATION, PARTLY LEARNED AT SCHOOL, HELPS PEOPLE COOPERATE AND WORK WELL TOGETHER.

The separate elements of communication, speaking, listening, writing and reading, have all been discussed at this point. What is necessary now is to add the vital link of understanding. The teacher might read or show material in

foreign languages or in very technical terminology or in shorthand. This will demonstrate that communication needs two elements, transmission and reception, before it is effective. Some of the previous situations may then be reviewed, e.g., the waitress must speak clearly and the cook understand before the customer can get his order, etc.

UNDERSTANDING OF MATHEMATICS HELPS PEOPLE IN THEIR WORK.

The same sort of interview technique as was used in discovering the necessity for speaking might be used here. However, if desired, the students might again adopt occupational identities and interview each other as to how they use mathematics or numbers in their work. Some of the boys might make special projects of how professional sports figures use numbers. Some creative students might make cartoons or jingles illustrative of this concept.

THERE IS A WIDE VARIETY OF JOBS BECAUSE OF SCIENCE.

Some separation of science into various branches such as botany, zoology, physics and chemistry might be one way to start this concept. The students might explore the yellow pages of the telephone book, identifying those firms which fall into one or more areas of the above concerns.

AN UNDERSTANDING OF SCIENCE HELPS MANY PEOPLE IN THEIR WORK.

This could be a good place to explore the current concern for ecology. It should be emphasized that concern,

such as young people tend to manifest today, is not enough. It must have a sound base of knowledge, and much of this knowledge is in the realm of science. The analysis of pollution, for instance, in water and in air, is based on chemistry. Many concepts from botany and zoology are needed in working with plants and animals to discover why the trees die along a highway or why a species (such as the pelican) is becoming endangered. Since preservation of the environment must be the concern of all, regardless of occupation, it is obvious that everyone needs this base.

MANY JOBS ARE RELATED TO SCIENCE.

Have the students keep a log of radio, TV and printed commercials which feature a science base. It will be found that not only health products, but many other products show this (laundry products with enzymes or bleach, gasoline with special ingredients, etc.)

ADVANCES IN SCIENCE CHANGE WORK.

This somewhat parallels an earlier concept concerning technological and social changes. Have students choose products and show the differences in fifty or a hundred years. For instance, automobiles, airplanes, home appliances, fabrics, etc., all show marked changes. If it seems desirable, students might project these changes fifty years in the future to imagine what further changes might have been made in the year 2025. The medical and dental sciences

also can be included. Newspaper articles such as the recent one on the longest surviving heart transplant patient might be collected and used as resources here.

HAVING A SCIENTIFIC ATTITUDE (PROBLEM SOLVING) HELPS MANY PEOPLE IN THEIR WORK.

This concept involves the managerial level much more than has any previous one. Some such level should be chosen --perhaps the management of a supermarket would be a suitable and familiar one. The whole concept of problem-solving (scientific attitude) should be reviewed. Then the students should apply this sequence to the problem. If a manager can be invited to visit class and discuss the situation, it might prove of great assistance. He should, however, be briefed beforehand so that he could make his presentation in suitable terms. It is undoubtedly true that he takes a problem-solving approach, but it is unlikely that he would think of it in the precise terms or sequence in which it will have been presented to the class.

The teacher may, in preparation for the examination, review the entire unit. The last concept is probably the most difficult and therefore the teacher might wish to concentrate on it. The class might, individually or as a group, discuss how many different occupations might use a scientific approach. If this is done individually, the results should be shared, and constructive criticism made to enhance the understanding of all students.

UNIT TEST IV

This test may be administered on a pre- and post-test basis to determine growth, or it may be used only at the end of the year to assess mastery of concepts. The teacher may, according to his assessment of his class, reproduce this by ditto or mimeograph, may write the questions on the chalkboard, may give it orally or may adopt any other means which seem most appropriate. In the case of students with limited written language skills or other handicaps, the teacher may wish to administer it orally and individually. In this case, the use of a tape or cassette recorder is recommended. This test can be administered, in those circumstances, by an aide or more proficient student for the teacher's evaluation at his convenience. The test is designed to be scored on a go, no-go basis, and therefore only five points are possible. For instance, if a question has a number of parts, all parts must be correct in order to receive any credit at all. Any question calling for an explanation can be judged adequate or inadequate by the teacher from the background of his knowledge of that particular child.

1. What are the four areas of communication? Choose one and explain in detail how it is used by some worker.

2. Give specific ways in which a worker might have to use each of the following things he learned in school.

   a. Reading
   b. Writing

c. Mathematics
d. Playing on a team
e. Finishing assignments

3. Name five occupations which require special education and name what that education would be.

4. What are the steps in a problem-solving or scientific approach?

5. Henrietta doesn't read at grade level. How would the teacher use a scientific approach to this problem?

FIFTH GRADE

This unit could become the target of criticisms that elementary students are being forced to make occupational choices. It must be reiterated and stressed that this simply is not so! What this program, particularly in this unit, does do is to attempt to guide the student toward a more intelligent choice when it becomes appropriate. It tries very hard, first of all, to broaden his awareness of the almost infinite variety of occupations which do exist, as well as the possibility of new ones which are developing almost daily. Beyond this, it attempts to show him the factors to be considered when the time comes. Too many people get into an occupation without adequate consideration; sometimes it appears to have happened purely by accident.

Through the cluster approach, which is developed in the sixth grade, the student becomes aware that all occupations can be placed in broad groupings and that there are jobs for any level of ability and training within each grouping. Thus he learns that no area of interest to him is beyond his reach. Somewhere within his field of interest there can be a niche for him.

In this unit, the importance of preliminary data is stressed. The knowledge that different occupations require certain characteristics and that different individuals possess certain characteristics leads inescapably to the conclusion that the better these are matched, the happier the

vocational choice will be. This unit, therefore, looks at information concerning occupations and encourages self-examination.

INFORMATION ABOUT CAREERS IS NEEDED BY ALL INDIVIDUALS.

The students should depict, either in an essay or by a drawing, a possible career. Then they should be asked to explain how they knew about this career and if it is the only possible one for them. Then they "trade careers" and announce a decision as to whether the career depicted by another child is or is not for them. The teacher then injects a number of very esoteric careers (by title only) and asks the students to decide which are and which are not for them. Adroit leadership of discussion by the teacher will elicit the idea that no one can say whether a career is or is not for him unless he knows something about it. The corollary of this is that the more knowledge one has about a greater number of occupations, the more likely he is to have suitable and pleasing alternatives.

(Some of the suggestions the teacher might advance are Cell-Tender Helper, Desma Laster, Face Cutter, Grid Operator, Heading Matcher and Assembler; Instantizer Operator, Matrix Drier Man, Round-Up-Ring Man, Steel-Box-Toe Inserter, Twister Tender. Dont' laugh; all of these are described in the Dictionary of Occupational Titles.)

MAKING A CAREER CHOICE REQUIRES CAREFUL STUDY.

How do you know a new pair of shoes will be good? You try them on to see if they fit. Clothes, also, you look at to determine style, color, material, etc., and then you try them on. How do you pick out a book to read? The title or the pictures may be attractive, or you may read a review, or you may know that that author generally writes good books. And how about buying a car? You read all the facts about the different cars, you talk to people who own different cars and to different dealers, and you take a test drive.

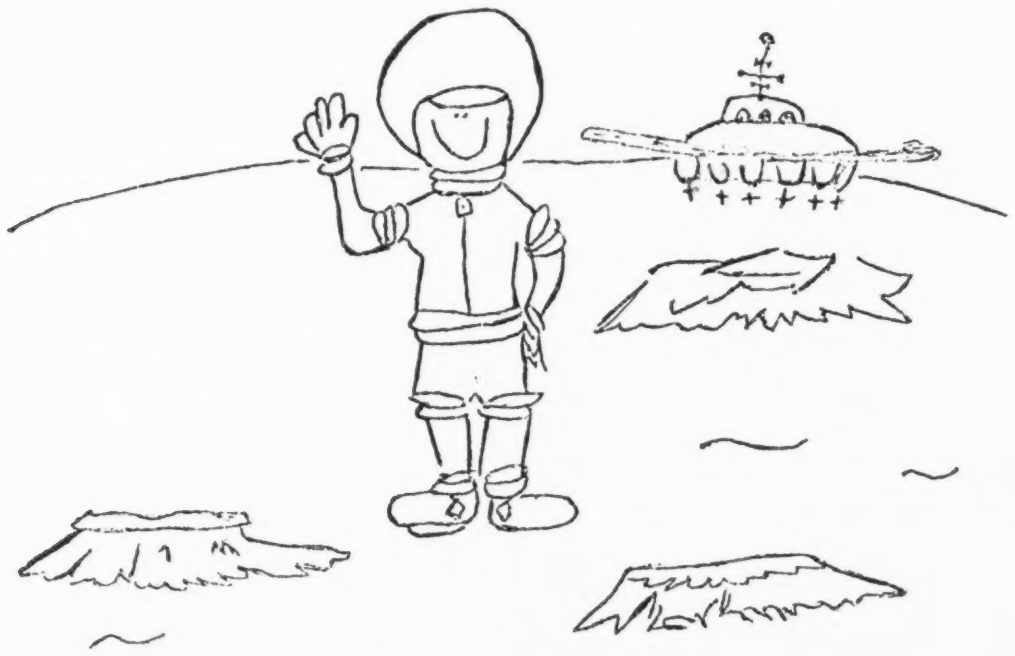
These are the kinds of investigation you make for something you expect to have a few hours, a few months or a few years. What kinds of investigations should you make about something which you could have most of your life, namely, your occupation?

This could spark a discussion to enforce the idea that careful study should precede career choice.

THERE ARE AREAS OF INFORMATION CONSIDERED IMPORTANT IN MAKING A VOCATIONAL CHOICE--THE NATURE OF THE WORK, TRAINING, WORKING CONDITIONS, AND THE LIKE.

Again, this might be an area for committee work. Have the class list all the types of information <u>they</u> consider desirable to know; these should include the above and may go far beyond. Then assign a committee to work on each area listed and have them design a method of presenting to the rest of the class why that area is important. Such methods

might include traditional reports, stories based on what could happen if one failed to get the requisite information, cartoons, skits, etc.



I didn't think to ask if this job involved traveling.

OBSERVATION OF PEOPLE AT WORK HELPS IMPROVE KNOWLEDGE ABOUT CAREERS.

This can best be taught after one or more field trips. The children might be asked to describe some occupation they have observed and tell how they learned something they had not previously known about it. Such description might be oral or written. This would be excellent after a visit to the power plant. Most children (in common with most adults) have very little concept of what is involved in the transformation of one kind of energy into another.

INDIVIDUALS DIFFER IN THEIR ABILITIES, INTERESTS, ATTITUDES, AND VALUES.

This is a good place to use the SRA self-inventory materials or conduct a sociogram-type activity. The teacher might list abilities, attitudes, interests, etc., and have the children name those of their peers who fit the descriptions. Examples might be:

Likes to play quiet games.
Likes to play active games.
Likes to talk.
Likes to sing.
Likes to draw.
Likes to read.
Likes to do puzzles.
Is very kind.
Gets along well with everybody.
Has only a few good friends.

These are only a few of the areas which might be explored. The concept of individual differences should become very obvious.

INDIVIDUALS ARE QUALIFIED TO PERFORM IN MANY DIFFERENT OCCUPATIONS.

A panel may be selected of four or five students to serve as "employment managers." They will choose another student and each will designate a suitable occupation for the "chosen," explaining why they think this might be suitable. The "chosen" has the right to challenge any occupation designated for him/her, but it must be done on reasonable grounds. That is, "I get impatient very easily," rather than "Oh, I wouldn't like that." Panels and "chosens" should be rotated to give many or all students a chance to play the game.

Note to the teacher: This will have to be carefully supervised to prevent cruelty or too much horseplay. It is not unheard of for students of this age to designate the most unattractive girl in the class a future movie star, etc. Also, the popular boy may well be assigned all the glamour occupations, and some return to realism must be guided by the teacher.

SUCCESSFUL PERFORMANCE ON MOST JOBS REQUIRES CERTAIN PERSONAL QUALITIES AS WELL AS SKILLS.

Have children choose up in groups of two or three. They then invent situations, or, if they cannot think of any, the teacher may assign situations. The following are examples:

1. A waitress who is terribly rude. The other group members will be her customers.
2. An attorney who is always late. The other group members represent the court trying to do business when he is not there.
3. A bus driver who won't obey rules. The others are passengers who get upset because the bus doesn't follow its regular route, and they can't get where they want.
4. A florist who won't do his work. The others are customers who are all upset because the flowers they ordered for a dance, a wedding, a funeral, a birthday, etc. didn't show up.

The situations are almost endless. After the children role play them and discuss what would happen to the employee with these undesirable traits, the concept should become clear.

UNDERSTANDING ONE'S CAPABILITIES AS WELL AS LIABILITIES AIDS THE DECISION-MAKING PROCESS.

This is a place to emphasize the positive aspects. After a discussion of the terms capabilities and liabilities, students might make a chart listing a strong point and a weak point for each child. (Teacher guidance is necessary here to keep the listing of weaknesses from being cruel.) This is an excellent place to build self-confidence. The teacher emphasizes that each of us has some strong points and that even the greatest people in the world have weaknesses. The class might look up some of the weaknesses of great figures of history, e.g., Edison was hard of hearing, F. D. Roosevelt was crippled from polio, J. F. Kennedy had back trouble. This is not to be a tearing-down or debunking, but rather to show how important people have done the best with their strengths and worked to overcome or ignore their weaknesses.

STUDENTS SHOULD LEARN ABOUT THEMSELVES AS PART OF PREPARATION FOR THE WORLD OF WORK.

This is, again, a place where the SRA self-inventory may be used. Another activity might be to have students pair off and each describes himself/herself while the partner also describes him/her. These descriptions could be in the nature of:

I like	He/she likes
I don't like	He/she doesn't like
I can	He/she can
I can't	He/she can't
I am	He/she is
I am not	He/she isn't

The students then compare their self-description with their partner's description to see how closely they match. The teacher should guide the students to the realization that we often do not see ourselves clearly or as others see us, and that only through study can we learn about ourselves. Learning about ourselves is basic to deciding what we want to do in the future.

SELF-UNDERSTANDING IS IMPORTANT IN MAKING CAREER DECISIONS.

The class, guided by the teacher, can come up with a list of opposites from the World of Work.

Sits at a desk all day.
Moves around a lot.

Works at the same place.
Often works in different places.

Always works with the same people.
Works with lots of different people.

Takes orders.
Gives orders.

Works inside.
Works outside.

Has to read and think a lot.
Mostly works with body.

Again the list can be almost endless. The teacher can spark the memory of the characteristics of some of the workers who have been seen on field trips. Then he/she guides the discussion into the ideas that to understand what one is and to understand what is required by a job is basic to a happy career.

FINDING AREAS OF INTEREST CAN AID SELF-UNDERSTANDING.

Each student chooses, independently, a topic to research and report on. This should produce a wide variety of interests. The discussion should feature questioning why the students have these particular interests with the idea of broadening self-understanding.

SELF-UNDERSTANDING CAN POINT TO OCCUPATIONAL INTERESTS.

This follows directly and logically from the previous concept, and, in fact, may be treated simply with a continuation of the previous discussion. The pattern thus becomes interest ——> self-understanding ——> occupational interest. For instance, a child might have chosen to do a report on elephants. This could be developed to show that one of his basic traits and concerns was a feeling for animals. This, in turn, could point toward Humane Society, zoo work, veterinary medicine, stock ranching and so on. If the children do not perceive these links for themselves, the teacher should guide their thinking.

INDIVIDUALS' VALUE SYSTEMS AFFECT CAREER CHOICES.

What is a value system?
What are some of the areas we call values?
Which of these are areas where different people have different values?

The teacher might start out by reading the legend of the Spartan boy and the fox. The assumption is that the children would (hopefully) reject the value of theft. However, they will most likely value the bravery and stoicism

involved. This can lead into modern day values, religious, ecological, concern for people, etc. Then the concept could be developed that, depending on the strength and nature of the value, it will dictate career choice to some extent. For instance, the ministry reflects religious values; Forestry Service, Fish and Game preservation work, and a whole flood of new occupations reflect an ecological value; and concern for people sparks many careers. Among these are social work, health occupations, Peace Corps, VISTA, etc. A value on education and thought might lead to research, university work, etc. This is also an area where the teacher might wish to use some open-ended role playing situations to work with the students on desirable value systems. There is an excellent book describing this technique and postulating situations; the authors are George and Fanny Shaftel.

LEISURE TIME ACTIVITIES AFFECT CAREER CHOICE.

Students may develop an interview form for use in sporting goods, music and art supply stores to determine the way in which career choice has been affected by leisure time pursuits. They might then expand from those careers which have arisen directly from such pursuits to a much more general influence. In this latter consideration would be such ideas as "If you like to go deep-sea fishing, would you wish an occupation which could be carried on only in Kansas or Montana?" Or, "What occupations would be suitable if you liked to travel?"

HOBBIES AND INTERESTS SOMETIMES LEAD TO OCCUPATIONS.

For a bit of variety, the students might plan and stage a hobby show. Then the discussion could center on any ways that any of these could lead to occupations. One teacher uses a personal interest in rock collecting to spark interest and learning. As an example of how a single hobby could lead to a variety of careers, the class could consider the obvious and not so obvious ones resulting from this. For instance, there are rock shops all over the state of Nevada. Not only do these have proprietors, but what about the people behind him? He sells specimens, some of which have been prepared in one way or another. By whom were they prepared, using what machinery or equipment? Who made that machinery and equipment, and who made the other things he sells, the digging, cutting, and tumbling equipment? What about scientists who specialize in geology, archaeology, paleontology? What about masons who work with stone in buildings and other structures? What about sculptors? The first attractive rock picked up and given a place of honor in a student's bedroom may open a thousand doors. This development can, of course, be carried out for any hobby or interest a student can demonstrate.

CAREER CHOICE AFFECTS THE INDIVIDUAL's TOTAL LIFE--LEISURE TIME ACTIVITIES, THE SELECTION OF FRIENDS AND THE SATISFACTION OF NEEDS.

Here the students might involve their parents by asking them to describe how their total life has been affected by

their work. Enough different replies should emerge to give a complete picture. Where a person lives, not only in terms of state or city, but even street, may be one result. Choice of friends, choice of leisure time activities, including the particular locations, in short, the whole social life will be affected. Students might be given such preliminary clues before their interviews.

UNIT TEST V

This test may be administered on a pre- and post-test basis to determine growth, or it may be used only at the end of the year to assess mastery of concepts. The teacher may, according to his assessment of his class, reproduce this by ditto or mimeograph, may write the questions on the chalkboard, may give it orally or may adopt any other means which seem most appropriate. In the case of students with limited written language skills or other handicaps, the teacher may wish to administer it orally and individually. In this case, the use of a tape or cassette recorder is recommended. This test can be administered, in those circumstances, by an aide or a more proficient student for the teacher's evaluation at his convenience. The test is designed to be scored on a go, no-go basis, and therefore only five points are possible. For instance, if a question has a number of parts, all parts must be correct in order to receive any credit at all. Any question calling for an explanation can be judged adequate or inadequate by the teacher from the background of his knowledge of that particular student.

1. Explain why everybody needs information about many careers.

2. Name three things one should find out about any occupation before he considers it.

3. What things should a person know about himself before he chooses an occupation? (Name at least four.)

4. Name three occupations you could enter and three occupations you could not enter, with reasons for each. (e.g., I could not be a long-distance bus

or truck driver because I do not like to travel.)

5. Give two examples of how a hobby or leisure time activity could lead to a career.

SIXTH GRADE

Every occupation which exists at present can be placed into a cluster with related occupations. Within each cluster there is a wide range of demands, so that regardless of one's abilities, there is some niche for which he can qualify within the cluster of interest to him. Briefly the above two statements summarize the work of the sixth grade. This unit breaks the work of the world into some fourteen clusters; these are then further subdivided. This grade should serve to orient the student to the concept of clusters and should familiarize him with them. The intention is to provide a lead-in to a cycle of hands-on experiences with many of the clusters. Later the student may take an orientation to a particular cluster which attracts him. If this proves successful, he should emerge with a picture of where he might feel comfortable within that cluster and a specific plan for preparing himself for the particular spot he has chosen. This might take the form of deeper study in high school, so that he graduates with entry-level skills. Another possibility is that his high school program will have a new purpose, a correlated approach to further training.

It will be noted that the format in this unit departs from that of the previous ones. Rather than presenting a group of concepts with suggested activities, this unit has only three concepts, and activities are left up to the individual teachers. The rest of the unit is a breakdown of the

fourteen suggested clusters. The teacher might wish to initiate the unit with a class discussion of what constitutes the relationship upon which groupings can be made. He may wish to suggest certain similarities as possible links for the students to agree or disagree with. These would include:

1. Work schedule - quickly apparent that this has no bearing.

2. Amount of pay - again obvious that widely disparate occupations might command equivalent salaries.

3. Location of employment - this is better, but does not answer all points. For instance, a bank teller and a bridge toll collector work in very different places, yet both come within the Public Service cluster. Similarly, while a prison guard and a prison cook may work in the same place, they actually belong in different clusters. (The guard is in Public Service, while the cook is in Consumer and Homemaking--Related Occupations.)

4. Training - A college professor and a physician may have roughly equivalent amounts of education, yet they are not apt to be within the same cluster. Probably the professor is in Public Service, and the physician is in Health Occupations. (Of course, depending upon the physician's specific job, he might also be in Public Service.)

5. Even duties may not be a totally reliable means of establishing relationships. For instance, there is room for an artist in Fine Arts and Humanities, Marketing and Distribution Occupations and Communication and Media. He might be classified in any of three clusters, depending upon the specific application of his art.

Thus the students must eventually be guided to realize that a cluster is based on the service it provides.

On following pages are presented one possible division into clusters. The teacher may wish to provide a copy for each student for inclusion in his notebook. As the students acquire facts on specific occupations, he may place them in

context of the appropriate outline. Naturally, some clusters will be studied in greater depth than others; however, an individual student with a particular interest might wish to do independent work. For instance, in an inland city the study of Marine Science Occupations must of necessity be more academic and vicarious. However, an occasional student may find this area so fascinating that he might wish to delve much more deeply therein.

As far as techniques of study, the field trip will probably continue to be a valuable teaching tool. Films and filmstrips will be useful. Research and reports, individual and committee, are appropriate to the subject matter and to the grade level. Oral and written language skills can be emphasized, and there can be distinct links to social studies, mathematics, music, art, etc.

The three concepts to be stressed throughout the entire year are:

CAREERS ARE GROUPED BY JOB FAMILIES; POSITIONS ARE RELATED WITHIN JOB FAMILIES

WITHIN EACH JOB FAMILY OR CLUSTER THERE ARE MANY JOBS WHICH REPRESENT A WIDE RANGE OF QUALIFICATIONS, TRAINING, DUTIES, WORKING CONDITIONS AND PAY

EVERY INDIVIDUAL CAN FIND, WITHIN A CLUSTER WHICH INTERESTS HIM, SOME POSITION FOR WHICH HE IS SUITED

These should be taught through the following cluster outlines.

CLUSTER FOR
AGRI-BUSINESS AND NATURAL RESOURCES

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Support and Regulations

Guardianships

- Indians
- Eskimos
- Trust territories

Safety and regulations

- Federal
- State

Conservation

- Soil
- Minerals and petroleum
- Fish and wildlife
- Water

Research

- Experimentation
  - Timber
  - Wildlife and fish
  - Minerals and petroleum
  - Water
- Water
  - Pollution control
  - Quality control
  - Transportation
  - Desalinization
- Dissemination
  - Reports and visual aids
  - News media

Forestry

- Production
  - Propagation
  - Management
- Services
  - Business and finance
  - Contract
  - Supplies
- Conservation
  - Fire control
  - Planting and thinning
  - Disease and pest control
- Processing and marketing
  - Logging
  - Saw mill operation
  - Pulpwood manufacture
  - Transportation

Land and Water Management

- Parks
  - State
  - National
  - Private

Inland waterways

- Pollution control
- Commerce
- Recreation
- Commercial fisheries

Hydro-electric power

- Federal
- State
- Private

Fisheries and Wildlife

Management

- Propagation
- Protection
- Controlled use

Production

- Fish farms
- Game preserves
- Wilderness areas
- Conservation

Utilization

- Commercial fisheries
- Recreation
- Hunting and trapping

Mining and Quarrying

Exploration

- Geological
- Geophysical
- Seismographic
- Photo-grammetric

Production

- Excavation
- Extraction
- Transportation
- Mining-benefication

Processing and storage

- Smelting
- Milling

Processing and storage (continued)

- Refining
- Waste disposal
- By-products
- Storage

Distribution

- Marketing
- Transportation

Petroleum and Related Products

Exploration

- Prospect drilling
- Geophysical
- Seismographic
- Photo-grammetric

Production

- Drilling
- Construction and maintenance
- Pumping
- Deep well mining - salt, sulphur
- Extraction
- Waste disposal
- Storage

Services

- Contract
- Management facilities and equipment
- Supplies

Distribution

- Marketing
- Transportation

Support and Regulations

Inspection and regulatory

- Federal
- State
- Local

Government programs

- Finance
- Acreage and production controls
- Soil and water conservation

Research

- Experimentation
  - Crop production
  - Animal production
  - Food and fiber processing
- Dissemination
  - Preparation of reports and visual materials
  - Federal extension service
  - News media

Production

- Crops
  - Planting
  - Cultivating
  - Harvesting
- Animals and fish
  - Breeding
  - Raising
  - Feeding
  - Management
- Horticultural products
  - Propagating
  - Cultivating
  - Harvesting
  - Landscaping

Service

- Supply
  - Machinery
  - Seed
  - Feed
  - Chemicals
  - Veterinary
- Business
  - Finance
  - Insurance
  - Contracting
  - Management

Processing and Marketing

- Selecting and purchasing
  - Inspection
  - Grading
  - Transportation
- Processing
  - Food
  - Fiber
  - By-products
- Distribution
  - Cooperatives
  - Farm organizations
  - Market forecast services
  - Commission buyers
  - Packaging
  - Storage
  - Transportation

CLUSTER FOR
COMMUNICATION AND MEDIA

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Line Communications

Data transmission

- Systems
- Programming
- Computer and console operations
- Peripheral equipment operations

Telegraph

- Communications systems operations
- Line servicing
- Installing and maintenance

Telephone

- Information communications
- Central office equipment
- Installation and maintenance

Telephone (continued)

Line and cable splicing
Telephone and PBX installation and maintenance

Broadcasting

Radio/television

Electronics systems
Electromechanical systems
Instrumentation
Radio and TV servicing
Broadcasting
Radio and television announcing

Satellite transmission

Electronics systems
Electromechanical systems
Microwave systems
International communications
Federal communications

Laser transmission

Electronics systems
Optics
Space communications

Audio/Visual

Photographic reproduction

Lithography, photography and plate making
Photoengraving
Commercial photography
Photographic laboratory and darkroom processes

Recordings

Industrial electronics systems
Audio systems

Language

Signs/symbols, design, production

Sign painting
Drafting/illustrating
Advertising
Servicing/fabrication

Equipment design production

Research and development

Publishing

Graphic arts

Printing processes
Silk screen making and printing
Bookbinding

Journalism

Creative writing
Reporting
Editing
Publication

Commercial art

Illustration
Animation
Layout processes

CLUSTER FOR
CONSTRUCTION

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Design

Architectural

- Residential
- Commercial
- Industrial
- Landscape

Civil

- Civil
- Mechanical
- Electrical

Contracting

Crafts

- Masonry
- Metal

Crafts (continued)

- Wood
- Glass and plastic

Materials procurement

- Manufactured
- Natural
- Synthetic

Equipment operations

- Air
- Electric
- Mechanical
- Hydraulic

Office operations

- Estimating
- Scheduling
- Expediting
- Security operations

Interior

Design

- Layout
- Illustrations

Decoration

- Painting/papering
- Draperies
- Decor

Furnishings

- Furniture
- Floor covering
- Lighting fixtures

Landscaping

Nursery operations

- Horticultural installations
- Turf installations
- Sprinkler systems

Grounds maintenance

Equipment operations and maintenance

Land Development

Site preparation

Site layout
Earth moving operations

Utilities

Communications
Gas and electric
Water
Sewer
Storm drainage

Fabrication and Installation

Field operations

Foundation work
Structural work
Finishing operations
Prefabrication

Building systems

Prefabrication
Field assembly

Materials fabrication

Materials testing
Forming and shaping

CLUSTER FOR
CONSUMER AND HOMEMAKING--RELATED OCCUPATIONS

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Food Service Industry

Production and management

- Menu planning and controlling cost
- Food purchasing
- Food storage and inventory
- Quality food preparation
- Equipment care and maintenance
- Safety maintenance
- Cleaning and sanitation
- Controlling quality

Service and delivery

- Maintenance and food quality
- Counter attending
- Setting up tables
- Serving food
- Packaging food
- Delivery of food

Testing and product development

- Developing recipes
- Experimental testing of food
- Evaluating food product
- Food demonstration

Nutrition

- Analysis of dietary needs
- Menu planning in relation to dietary needs
- Counseling re nutritional needs
- Teaching nutrition

Clothing, Apparel and Textile Industry

Production and management

- Spinning yarn
- Weaving fabric
- Cutting garment
- Marking and assembling
- Sewing and stitching
- Trimming and finishing
- Pressing
- Inspecting and checking

Design

- Creating and designing garments
- Patternmaking
- Grading pattern

Clothing alteration and maintenance

- Laundering
- Dry cleaning
- Repairing
- Alteration

Product development

- Developing new design or product
- Experimental testing
- Evaluation
- Demonstrating design or product

Child Care, Guidance and Teaching

Family child care homes

- Nurturing of individual child
- Caring for physical needs of child

Family child care homes (continued)

- Protecting the child
- Guiding and teaching child
- Compliance with regulations
- Adjusting household to meeting needs of child

Institutional child care services

- Providing physical care of children
- Nurturing and guidance of children
- Planning and adapting programs to children with varying needs
- Teaching of children
- Supervision of children

Community child care and guidance services

- Caring for physical needs of children
- Planning and scheduling for children's activities
- Directing children's activities
- Supervision of children
- Guiding and nurturing of children
- Housekeeping and maintenance
- Operating, management and supervision

Family and Community Services

Public housing

- Home management and family counseling
- Housekeeping and household maintenance
- Consumer counseling

Social welfare

- Assisting welfare agency
- Family planning counseling
- Consumer counseling
- Assisting the aging

Institutional Household Maintenance Services

Household maintenance

- Floors, walls, window maintenance
- Maintenance and care of furnishings and household equipment
- Selecting equipment and supplies

Institutional maintenance

- Floor and wall maintenance
- Window maintenance

Institutional maintenance (continued)

- Furnishings and equipment maintenance
- Checking and inspecting

Product testing

- Analysis of market for cleaning supplies and equipment
- Comparative testing
- Evaluation of results
- Communicating recommendations

Inter-Changeable Technician for Homemaking

Home management

- Identifying family goals, values and standards
- Decision making
- Identifying and planning of household tasks
- Developing homemaking skills
- Organizing, implementing and adjusting plan of operation
- Evaluating results from operations

Consumerism

- Assessment of needs
- Comparative analysis of products
- Decision making and utilization of resources
- Purchasing
- Utilization of product
- Evaluation of product

Personal-family relationships

- Assessment of individual and family needs
- Identifying individual and family goals, values and standards
- Developing relationship and problem solving skills
- Nurturing of family members
- Communication

Housing Design, Interior Decoration

Design and decoration

- House designing and planning
- Interior decorating
- Counseling on house design and decoration

Furnishings selectivity

- Selection of paints and finishes
- Selection and construction of draperies, slip-covers
- Selecting and combining home accessories
- Selection of household equipment

Refurbishing and refinishing

- Upholstering
- Refinishing furniture
- Caning
- Repairing furniture

Product testing

- Serviceability testing of furnishings
- Comparative testing of household equipment
- Counseling on home furnishings and equipment
- Demonstration on home furnishings and equipment

CLUSTER FOR
ENVIRONMENT

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Soil and Mineral Conservation and Control

Research and experimentation

- Hydroponic plant culture development
- Soil transplant science development for non-arable area utilization
- Soil or surface stabilization and erosion resistance systems development
- Reclamation of alkaline and other chemically killed soil
- Reduction of total water required for plant production
- Development of mineral recovery processes for low grade ores
- Mineral recycling processes development

Soil management

- Planting
- Cultivating
- Harvesting
- Soil nutrient and water conserving practices
- Soil stabilization and erosion prevention
- Fertilizer, weed killer and other chemical utilization

Mineral extraction

- Exploration
- Excavation
- Transportation
- Production
- Land reclamation
- Wastewater recycling
- Airborne pollutant control

Data collection, analysis and processing

- Monitoring and recording
- Sample collection
- Water analysis

Utilization control

- Pollution regulation enforcement
- Mine and dump restoration regulation control
- Monitoring and enforcement of mineral production quotas

Space and Atmospheric Monitoring and Control

Research and experimentation

- Instrumental sampling, analysis and monitoring
- Effects of outer-atmospheric pollution
- Reduction of internal combustion engine pollution
- Effects of sunlight on air pollution

Air pollution abatement and control

- Chemical analysis and monitoring
- Engine emission inspection and monitoring
- Industrial pollution identification and control
- Design of non-polluting industrial processes
- Anti-pollution education

Meteorological processes

- Chemical and particulate pollution effects on weather

Meteorological processes (continued)

Smog condition prediction
Analysis of weather factors related to urban or industrial planning

Utilization control

Anti-air pollution law enforcement
Long-range planning for reduction of pollution from transportation systems

Environmental Health Services

Assessment

Survey of environmental conditions
Monitoring potential hazards
Recording and reporting

Maintenance

Food services and handling
Hazards control
Waste disposal
Pest and varmint control
Water sanitation

Services

Regulation enforcement
Education
Mass health services

Administration

Governmental regulating
Community services
Institutional operations
Home implementation
Industrial safety engineering

Development and Control of Physical Man-Made Environment

Urban planning

Inter-area (county) planning for urban development
Demographic and population trend survey
Financial resources analysis
Transportation systems planning
Utility services planning
Police and law enforcement systems design

Urban planning (continued)

- Education, health and social service planning
- Long-range space utilization planning

Urban development and renewal

- Design and construction (reconstruction) of public facilities
- Architectural and building codes enactment and enforcement
- Population growth trend monitoring

Rural development

- Long-range land water resource use planning
- Rural services planning and development
- Rural facilities design and construction
- Rural utilities planning and development

Ornamental horticulture

- Design and culture of land covers and stabilizers
- Design and culture for beautification
- Design and culture for behavioral control
- Design and culture to maintain open space

Civil technology processes

- Design and construction of streets, highways, bridges, roadways and airfields
- Design and construction of waterways, dams, reservoirs and hydroelectric plants
- Design and construction of sanitation systems
- Design and construction of towers, buildings and framework

Noise abatement and control

- Noise level monitoring
- Noise level ordinance enforcement
- Acoustical design and construction

Solid waste pollution abatement and control

- Development and enforcement of systems for solid waste disposal
- Recycle solid waste materials
- Development and implementation of systems for garbage disposal

Forest, Range, Shore and Wildlife Conservation and Control

Research and experimentation

Development of species resistant to disease
Parasite control methods development
Shoreline stabilization and restoration
Systems development
Swamp and marsh land elimination (ecological effects of)
Chemical effects on species and ecological systems
Species life cycle discovery

Resource survey and monitoring

Geographical species survey and description
Monitoring of ecological balance of species
Ecological imbalance detection
Species harvesting data collection and reporting

Resource development

Tourist service industries development
Reforesting and replanting
Harvesting practices development and enforcement
Fish and game repopulation
Public awareness development
Sport and recreational facilities development

Resource protection

Construction of access roads
Public lands creation, protection and management
Forest and range disease and parasite control
Enforcement of timber, game and wildlife laws
Construction of flood and fire control structures
Development and construction of optimum environment for vanishing species
Conservation and culturing of species for maintenance of ecological balance
Instrumentation and airborne fire detection and fighting capability development

Utilization control

Sanitation
Education
Utilization and harvest regulation enforcement

Water Resource Development, Conservation and Control

Research and experimentation

Instrumental meteorological data collection
Meteorological and watershed survey and monitoring
Water table - land cover relationships survey and analysis
Water desalinization

Research and experimentation (continued)

- Underground waterflow systems discovery and charting
- Water purification systems development

Water pollution abatement and control

- Treatment plant construction and operation
- Watershed and reservoir systems development and operation
- Chemical analysis and monitoring
- Chemical and thermal pollution prevention
- Bacteriological analysis and monitoring
- Industrial pollution detection and monitoring
- Anti-pollution education

Civil technology processes

- Distribution and collection systems development
- Water and wastewater treatment systems development
- Watershed survey and mapping
- Drainage systems and development
- Irrigation, reservoir, canals and waterways development

Recreation development and management

- Game and fish propagation, harvesting and control
- Camps, parks and docking facility development
- Marine management and regulation
- Boat inspection and use regulation
- Park operation and management

Utilization control

- Water (riparian) rights laws
- Regional watershed agreements
- Pollution control regulations and enforcement legislative prohibition of use of non-biodegradable chemicals

CLUSTER FOR
FINE ARTS AND HUMANITIES

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Fine Arts

Creating

- Painting
- Printmaking
- Sculpture
- Musical composition

Performing

- Dance
- Dramatic arts
- Music
- Film-radio-television

Performing arts design

- Stage set design
- Stage lighting design
- Costume design

Performing arts production

- Stage set construction
- Stage lighting
- Costume production
- Stage management

Artist management

- Human relations--performing and non-performing
- Public relations

Visual and graphics design

- Illustration
- Industrial design
- Fashion design
- Environmental design

Media

- Film and tape editing
- Film processing
- Camera and recording operation

Humanities

Creative writing

- Novel
- Poetry
- Essay
- Drama
- Short story

Languages

- Foreign languages classical and modern
- Linguistics
- English language

History

- Cultures

CLUSTER FOR
HEALTH OCCUPATIONS

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Health Information Systems

Medical records

- Maintaining patient records
- Microfilming, storing and retrieving
- Transcribing
- Coding and indexing
- Report preparation and transmission
- Preparing original birth and death certificates

Medical library science

- Storing and retrieving publications
- Deleting and dispensing
- Report preparation
- Research
- Transmission

Medical illustration and photography

- Biomedical photographing
- Film preparation and projection
- Programming audio-visual presentations
- Graphic arts

Vital statistics

- Official recording of births, deaths, marriages, divorces and other information as required
- Maintaining official records
- Retrieving and dispensing information
- Preparing reports and statistical data
- Providing copies of official records

Health Services Delivery

Health maintenance

- Immunizing
- General screening
- Communicable disease control
- Health education

Community health services

- Mental health clinic service
- Visiting nurse service
- Home health service
- Water, food and waste control
- Case finding

Hospital and long term care services

- Patient care
- Diagnostic processes
- Therapeutic processes
- Administrative support services
- Restorative processes

Pediatric care and services

- Newborn clinic service
- Health screening for pre-school and school children
- Medical office care
- Institutional care
- Home care

Geriatric care and services

- Home care
- Institutional care
- Health clinic services
- Medical office care

Mental Health, Mental Illness and Retardation

Care of mentally retarded

- Institutional care and services
- Social services
- Training the mentally retarded
- Home and community services

Mental health maintenance

- Clinic services
- Diagnostic processes and referral
- Home and community services
- Social services

Psychiatric services

- Institutional care and services
- Home and community services
- Diagnosis
- Therapy
- Social services

Accidents, Injuries and Emergency Services

First aid and rescue services

- Ministering
- Reporting

Medical emergency services

- Transporting
- Disaster team service
- Institutional emergency service

Accidents and poisoning, control and prevention

- Information preparation and dissemination
- Poison control
- Safety education and engineering
- Records and reporting

Dental Science and Services

Dental health maintenance

- Examination and assessment
- Dental prophylaxis
- Preparing and maintaining records

Dental care

- Diagnostic procedures
- Treatment and corrective measures
- Maintaining patient records

Dental restoration

- Making impressions
- Preparing and maintaining prosthodontic devices

Pharmaceutical Science and Services

Regulation and control of pharmaceuticals

- Storage and accounting
- Distribution procedures
- Records on reportable items
- Information dissemination

Production of drugs, biologicals and chemicals

- Manufacturing
- Packaging and distribution
- Research

Retailing and distribution

- Prescription services
- Dispensing
- Delivering
- Records and reporting

CLUSTER FOR
MANUFACTURING

Operations

Management

Planning and policy administration
Data interpretation
Personnel and labor relations
Communications

Mid-management

Operations techniques
Data handling
Task analysis
Communication skills

Supervision

Operational procedures
Processing techniques
Personnel relations
Communication skills

Personnel

Personnel practices
Communication skills
Skill development
Career orientation

Design

Product

Model development
Prototype testing
Packaging

Process

Component/material flow systems
Assembly line systems
Cybernetics

Equipment

Foundry operations
Electromechanical systems
Machine operations

Materials

- Natural
  - Animal sources
  - Vegetable sources
  - Mineral sources
- Synthetic
  - Mineral derivatives
  - Vegetable derivatives
  - Extractive processes
- Receiving
  - Materials handling
  - Transportation and storage
- Waste output
  - Disposal operations
  - Recycling operations

Production

- Processing
  - Assembly line operations
  - Material flow operations
  - Automation
- Quality control
  - Component/materials inspection
  - Processing inspection
  - Product inspection

Distribution

- Packaging
  - Packaging development
  - Packaging manufacturing
- Marketing
  - Retailing
  - Wholesaling
  - Distribution
- Advertising
  - Product promotion

Transportation

Air
Truck
Rail
Pipeline
Vessel

Warehousing

Packing
Storing/inventory

Research

Product

Design
Materials
Utilization

Process

Production processes
Quality control

Marketing

Consumer research
Product promotion research

CLUSTER FOR
MARINE SCIENCE OCCUPATIONS

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Marine Biology

Marine micro-biological research

- Boat or vessel operation
- Collection gear, operation and repair
- Water sampling for micro-organism survey
- Bacterial culture, identification and isolation
- Plankton collection, preservation and storage
- Plankton sorting, identification and packaging
- Micro-organism life cycle and food systems

Marine animal (zoological) research

- Boat or vessel operation
- Collecting gear operation and repair
- Navigation, communication, meteorological fish finding systems
- Specimen collection
- Specimen sorting, counting and storage

Marine animal (zoological) research (continued)

- Live specimen laboratory studies
- Specimen dissection and micro or macro examination
- Survey of life cycle and range of species
- Food sources and cycles for species
- Diseases, parasites and enemies of species

Marine plant (botanical) research

- Boat or vessel operation
- Collecting gear operation and repair
- Navigation, communication, meteorological, plant finding systems
- Specimen collection
- Specimen sorting, counting and storage
- Live specimen laboratory studies
- Specimen dissection and micro or macro examination
- Survey of life cycle and range of species
- Nutrient sources and cycles for species
- Diseases, parasites and enemies of species
- Sedimentation, turbidity and sunlight effects on marine plant life

Marine biology laboratory management

- Acquisition of facilities, vessels and equipment
- Operation and maintenance of equipment
- Chemical laboratory services
- Botanical and/or zoological laboratory services
- Specimen storage and shipping services

Marine ecology research

- Marine plant and animal relationship studies
- Water chemistry effects on marine life
- Temperature effects on marine life
- Effects of light on marine life
- Effects of commercial fishing on marine life systems
- Control of marine life systems to conserve species

Commercial fishing

Ocean fishing

- Offshore fishing vessel operation
- Trawler and dragger operation
- Inshore fishing operations
- Seine, net, trap and gear making and repair
- Meteorology, navigation, communication and fish finding systems
- Shipboard product sorting, stowing and quality control

Seafood processing

- Shipboard or on-shore raw fish preparation
- Product cooking
- Product packaging
- Product preservation (canning, freezing, salting, drying, pickling, etc.)
- Product marketing
- By-products production (oil, meat, animal food, fertilizer or shells)

Seafood inspection

- Checking for legal species and size
- Bacteriological determination of product quality
- Analysis for adulterants or substitution of species
- Determination of toxic chemical content

Seaweed harvesting and processing

- Seaweed harvesting vessel operation
- Collection gear making and repair
- Product collecting, sorting and cleaning
- Packaging and preservation and delivery
- Chemical or pharmaceutical compound extraction

Sport fishing enterprises

- Charter party boat operation
- Deepwater party boat or vessel operation
- Gear and lure preparation and maintenance
- Navigation, meteorological, communications and fish finding systems
- Sanitation and fish cooling systems

Aquaculture

Marine fish or shellfish culture research

- Isolate potentially commercial species
- Develop physical system for its culture
- Develop food source and its production system
- Develop hybrids or superior strains
- Control parasitic and disease agents
- Develop systems to eliminate competing organisms
- Develop optimum harvest method
- Develop optimum system for controlling production cycle

Marine plant grower

- Isolate commercially useful species
- Develop physical system for its culture
- Provide optimum water, nutrient and sunlight conditions

Marine plant grower (continued)

- Develop superior strain
- Control disease, parasite and enemy organisms
- Develop system for controlling production cycle
- Harvest and process for market
- Deliver to market

Fish hatching, raising

- Construct hatching, growing and harvesting facilities
- Capture or acquire fertile adults of species
- Collect, fertilize and hatch eggs
- Deliver fry or young to growing ponds
- Provide food, if in artificial system
- Harvest and prepare for market
- Deliver (live or processed) to market

Marine Transportation - (See cluster for transportation)

Marine (Oceanographic) Exploration

Oceanographic mapping and charting

- Oceanographic vessel operation
- Air-borne photogrammetric and instrumental survey
- Instrumentation use and repair
- Depth sounding and charting
- Bottom sampling and charting
- Monitoring and charting dynamic change
- Oceanic topographical map and chart production

Ocean mineral exploration

- Photogrammetric or air-borne instrument surveys
- Geological interpretation of undersea topography
- Chemical analysis of water and bottom samples
- Underwater drilling, sampling and seismographic surveying

Ocean current and water research

- Oceanographic vessel operation
- Water sampling, temperature and chemical analysis
- Fixed or free floating buoy instrument systems
- Aerial photographic monitoring
- Ocean current chart and map production
- Meteorological and seasonal effects of ocean currents

Underwater Construction and Salvage

Offshore mineral production

- Drilling tender vessel operation
- Offshore drilling (oil, sulphur, brine) facility construction
- Offshore drilling operations
- Offshore dredge construction and operation
- Construction of offshore piping systems
- Offshore pumping, storage and loading systems

Underwater engineering research

- Submarine materials testing and development
- Underwater anchoring and stabilizing systems
- Fixed undersea structures design and construction
- Underwater repair and maintenance
- Mobile submersible machine design and construction
- Submersible machine operation

Deepwater diving and life support

- Diving tender boat operation
- Diving gear use and maintenance
- Gas and air to diver delivery systems
- Hardhat and scuba diving
- Submersibles, bells and decompression systems
- Communication systems
- Physiological monitoring, first aid and lifesaving

Underwater construction

- Construction tender vessel operation
- Underwater rigging
- Underwater welding, cutting, fastening and assembly
- Underwater anchoring, stabilizing, cabling and marking systems
- Submarine piping and pumping systems
- Underwater repair and maintenance

Underwater salvage demolition

- Salvage ship operation
- Salvage by air tank flotation
- Salvage by diving and recovering
- Salvage law and regulation
- Underwater demolition device design, placement and detonation

CLUSTER FOR
MARKETING AND DISTRIBUTION OCCUPATIONS

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Marketing Services

Finance

- Banking institutions
- Exchanges

Credit

- Consumer credit
- Commercial credit

Insurance

- Personal insurance
- Business and property insurance

Research

- Marketing information
- Product analysis and development

Marketing System

Retail trade

General merchandise group
Dealership and franchises
Specialty stores
Rental operations

Wholesale trade

Merchant wholesaling
Manufacturing
Merchandise brokerage
Farm products assembly
Petroleum plants and terminals

Service trades

Lodging
Personal services
Business services
Auto and miscellaneous repair and services
Travel, recreation and entertainment

Non-store retailing

Automatic merchandising
Mail order
Direct selling

International trade

Foreign operations
Exporting

Sales and Services

Industrial selling

Production and engineering
Business operations

Trade selling

Retail resale
Wholesale resale
Home and institutional resale

Consumer selling

Apparel, accessories and personal care
Hardware, materials, equipment
Housing, property and household products

Consumer selling (continued)

Food products and services
Automotive, transportation and petroleum products
Intangibles

Buying

Industrial purchasing

Purchasing procedures
Vendor relations

Buying for resale

Buying offices
Chain operations
Independent operations

Procurement

Bid advertisement
Direct negotiation

Sales Promotion

Advertising

Media
Organizations

Display

Display houses
Windows and interiors

Public relations

Customer and community services
Trade relations
Publicity

Physical Distribution

Product transport

Carriers
Traffic
Shipping and delivery

Storage

Warehousing
Inventory control

Materials handling

Receiving and marketing
Assembling and packing

CLUSTER FOR
PERSONAL SERVICE OCCUPATIONS

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Physical Culture

Consultation and services on human weight control

- Analyzing and counseling on weight problems
- Operating and maintaining reducing studio equipment
- Directing and guidance of physical exercise activities

Massage and related services

- Analyzing, counseling and massaging
- Programing of individual treatment
- Operating and maintaining massaging equipment

Entrepreneurship

- Establishing and equipping studio
- Owning and operating establishment

Entrepreneurship (continued)

- Analyzing and managing of finances and records
- Advertising and sales
- Custodial operation and maintenance of studio

Cosmetology

General customer care and special services

- Shampooing
- Hair styling
- Facial treatment operations
- Manicuring
- Scalp and skin treatment operations
- Styling and restoration of hairpieces
- Maintenance of tools, equipment and supplies

Theatrical and television make-up

- Characterization analysis
- Selecting and application of make-up for specific medium
- Make-up technology
- Maintaining products and supplies

Product testing and selectivity

- Color testing of products
- Purchasing of cosmetics and hairpieces
- Analyzing products
- Demonstrating of products and sales

Entrepreneurship

- Establishing and equipping shop
- Owning and operating establishment
- Analyzing and managing of finances and records
- Advertising and sales
- Custodial operation and maintenance of shop

Mortuary Science

Mortuary services and personal relations

- Embalming or cremating
- Transporting
- Restoration art processes
- Pathological examinations
- Assisting and counseling family members
- Contractual embalming and restoration art treatment

Special funeral home functions

Planning and arranging for special funeral functions
Transporting
Ushering and services
Displays and sales

Entrepreneurship

Establishing and equipping funeral home
Owning and operating establishment
Analyzing and managing of finances and records
Advertising and sales
Custodial operation and maintenance

Barbering

Customer care and special services

Shampooing
Hair styling
Shaving and facial treatment
Scalp and skin treatment operations
Styling and restoration of hairpieces

Entrepreneurship

Establishing and equipping a shop
Owning and operating establishment
Analyzing and managing of finances and records
Advertising and sales
Custodial operation and maintenance of shop

Household Pet Services

Grooming and specialized care

Shampooing animals
Styling, clipping and manicuring services
Exercising
Counseling services on animals
Mortuary care of animals

Boarding and hospital services

Providing physical care of animals
Nurturing
Exercising
Treating of ill animals

Obedience training

- Screening and selecting of animals
- Programing and training
- Placing and supervising
- Evaluating performance
- Sales

Entrepreneurship

- Establishing and operating pet shop
- Establishing, equipping and operating grooming center or kennel
- Advertising and sales
- Analyzing and managing of finances and records
- Custodial operation and maintenance of shop, center or kennel

CLUSTER FOR
PUBLIC SERVICE

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Financial

Revenue

- Taxation
- Bonds
- Fees

Disbursement

- Salaries
- Institutional support

Urban Development

Planning and engineering

- Appraisal and condemnation
- Community relations

Planning and engineering (continued)

- Urban renewal
- Technical assistance

Construction

- Inspection
- Labor relations
- Buildings
- Roads

Public housing

- Coordination
- Property management
- Recreation

Maintenance

- Service
- Supplies
- Construction and heavy equipment

Regulatory Services

Financial

- Credit unions
- Banks
- Insurance
- Savings and loans
- Stock exchange

Public records

- Birth
- Death
- Marriage
- Titles and deeds

Licensing

- Occupational
- Institutional
- Vehicular

Customs and immigration

- Customs inspection
- Immigration inspection
- Plant and animal inspection

Facilities

- Construction
- Purchasing
- Maintenance

Education

Instruction

- Teaching
- Counseling
- Supervision
- Support activities

Transportation

- Transport service
- Maintenance

Extension services

- Agricultural services
- Consumer services
- Homemaking services

Police and Fire

Technical support

- Inspection
- Accident prevention
- Special services

Law enforcement

- Land, air and water patrol
- Community relations

Communications

- Transmitting and receiving
- Fixed and mobile stations
- Maintenance
- Services

Maintenance

- Fire equipment
- Police equipment
- Electronic and other equipment

Defense

- Military
  - Services
  - Supply
  - Research and development
- Civil defense
  - Disaster planning
  - Emergency operations and control
  - Early warning

Post Office

- Marketing
  - Sales
  - Special services
- Operations
  - Processing
  - Distribution

Public Utilities

- Water systems
  - Water supply
  - Treatment and distribution
  - Installment and maintenance
- Sanitary service
  - Sewer systems
  - Refuse systems
  - Installation and maintenance
- Electric service
  - Generation
  - Distribution
  - Installation and maintenance
- Gas service
  - Manufacturing
  - Transmission
  - Service

Steam supply

Production
Distribution
Installation and maintenance

Public Health

Institutional care

Nursing homes
Mental hospitals
General hospitals

Community services

Out-patient clinics
Emergency services
Community health centers
Home health care

Food and drug

Sanitation
Meat and other foods
Drug control

Research

Pollution control
Communicable disease centers
Mental health

Labor Affairs

Employment services

Labor market survey
Employer relations
Counseling and testing
Placement

Employee compensation

Insurance
Worker compensation

Labor standards

Safety and health
Minimum wage
Safeguarding special groups

Highways

Design and construction

Planning
Land acquisition
Bridges and tunnels
Engineering and inspection
Road repair
Care of right of way
Landscaping

Toll and traffic control

Toll collection
Electronic and electric equipment
Installation
Maintenance

Public Transportation

Land

Rapid transit
Railroads
Buses and trucks
Bridges and tunnels

Air

Airports and terminals
Traffic control
Maintenance

Water

Inland waterways operation
Design and construction
Maintenance

Control

Port authorities
Turnpike and toll bridges
Registration and licensing
Inspection

Social and Rehabilitation

Children and youth

Child care assistance
Foster homes
Youth corrections and development

Adult

Assistance and support to the aging
Vocational rehabilitation

Family

Medical social assistance
Family support
Community and neighborhood outreach
Consumer affairs

Courts and Corrections

Courts

Judicial services
Legal services
Court services
Probationary services

Penal institutions

Security
Prison industries
Education and related activities

Parks and Recreation

Development

Planning
Design and construction
Operation

Services

Amusement
Recreation
Lodging

Maintenance

Conservation
Grounds and camps
Trails

CLUSTER FOR
RECREATION, HOSPITALITY AND TOURISM

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Environmental Management

Recreation and planning

- Research
- Zoning
- Design
- Construction
- Landscaping
- Maintenance
- Financing

Natural resource development

- Oceans, beaches, estuaries and other water bodies
- Ranges, forests, deserts and other lands
- Fish, game and wildlife
- Wilderness areas
- Scenic points and vistas
- Natural wonders
- Parks

Natural resource development (continued)

- Picnic and rest areas
- Camps and camping areas
- Zoos and aquariums
- Trails and waterways

Leisure-related property, facility and commodity entrepreneurship

- Vacation homes, apartments, condominiums
- Resorts, hotels, motels and lodging
- Facilities--ski, marina, etc.
- Equipment leasing and sales
- Concessions and restaurants
- Marketing and promotion
- Product manufacturing and distribution

Community Services

Public government

- Local parks and recreation
- Public housing recreation
- Beautification
- Armed forces recreation

Special groups

- Youth agencies
- Pre-school play and day care
- In-school day care and recreation
- Senior citizen centers/programs
- Church recreation
- Employee recreation
- Recreation for the handicapped

Commercial recreation

- Personal services
- Discotheques
- Theatres - stage and screen
- Amusement parks
- Physical culture operations
- Expositions
- Legitimate gambling operations
- Facilities - Bowling, Pool, Skating, etc.

Private

- Service groups
- Golf and tennis clubs
- Young adult groups - ski, social, etc.

Human Development

Education

- Recreation activities instruction
- Environmental education
- Community school recreation
- Museums and libraries
- Extension recreation

Movement

- Physical recreation programs
- Sports and athletics
- Coaching
- Children's games

Arts

- Graphic - printing, silk screen, layout
- Performing - Acting, instrumental music, singing and dancing
- Fine - Painting, sculpture, music composition
- Social - etiquette, entertaining, conversation
- Photographic - filming, processing

Humanities

- Celebrations, festivals and fairs
- Special cultural programs - Indian, Black, youth, etc.
- Language development
- Historic preservation/interpretation
- Creative writing

Mobility

Media utilization

- TV and radio
- Mass media
- Tourism and recreation promotion
- Recreation information systems
- Travel aids

Accessibility

- Tour direction
- Travel agencies
- Group travel services
- Special recreation/tourism vehicle services

Space

Urban open space design
Recreation transportation systems
Spatial geography and planning

Health Care

Preventive health

Recreation sanitation
Recreation safety
Leisure consumerism
Leisure product testing/controls
Physical fitness programs

Counseling

Outreach recreation programs
Avocational counseling

Therapy

Therapeutic recreation
Correctional recreation
Drug therapy

CLUSTER FOR
TRANSPORTATION

Operations

Management

- Planning and policy administration
- Data interpretation
- Personnel and labor relations
- Communications

Mid-management

- Operations techniques
- Data handling
- Task analysis
- Communication skills

Supervision

- Operational procedures
- Processing techniques
- Personnel relations
- Communication skills

Personnel

- Personnel practices
- Communication skills
- Skill development
- Career orientation

Aeorspace Transportation

Commercial aviation

- Commercial aviation
- Flight crew
- Ground support activities
- Aircraft maintenance
- Passenger services
- Freight services
- Airport facilities operations

General aviation

- General aviation
- Flight crew
- Ground support activities
- Aircraft maintenance
- Airport facilities operations

Spacecraft transportation

Surface to surface
Air to surface
Air to air (space station)
Surface to air
Launch operations
Landing operations

Pipeline Transmission

Liquid and gas transmission

Petroleum and natural gas transmission
Pipeline and tank farm operation
Pipeline and tank farm maintenance

Solids transmission

Slurry and coal transmission
Pipeline and tanking operations
Pipeline and tanking maintenance

Water Transportation

Inland water transportation

Riverboat and barge operation
Deck department
Engineer department
Stewards department
Merchant marine officers
Merchant marine seamen
Piloting

Ocean water transportation

Ocean and intracoastal vessel
Operations
Deck department
Engineer department
Stewards department
Merchant marine officers
Merchant marine seamen
Piloting

Land Transportation

Local and suburban transit

Vehicle operation
Agents and clerks

Local and suburban transit (continued)

- Security and inspection
- Signals systems
- Dispatching systems
- Equipment maintenance and repairs
- Right-of-way maintenance and repairs
- Structure maintenance and repairs

Highway transportation

- Vehicle operation
- Agents and clerks
- Security and inspection
- Freight handlers
- Estimating
- Dispatching systems
- Equipment maintenance and repairs
- Structures maintenance and repairs

Rail transportation

- Passenger service
- Freight service
- Operators
- Agents and clerks
- Security and inspection
- Signals system
- Rolling stock maintenance and repairs
- Way and structures maintenance and repairs